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CESSNA'S NEW MODEL 180

(See page 14)

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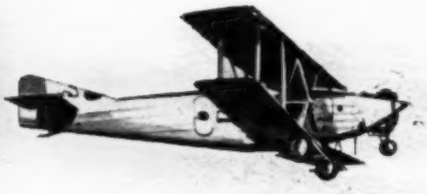

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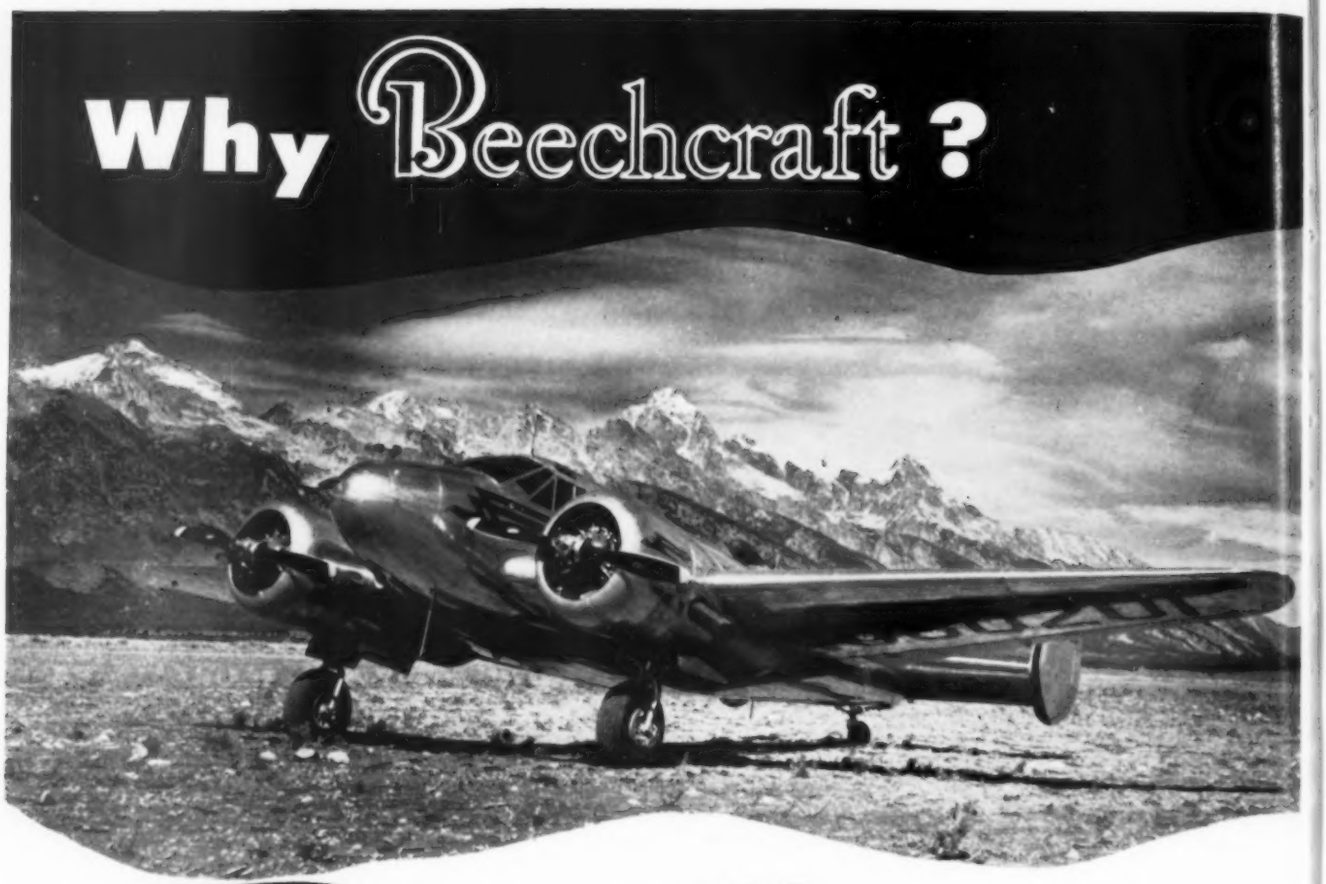

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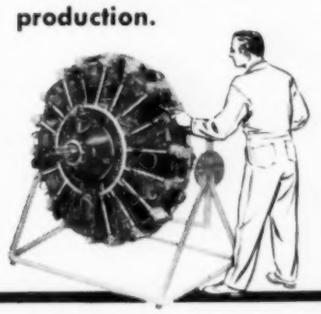

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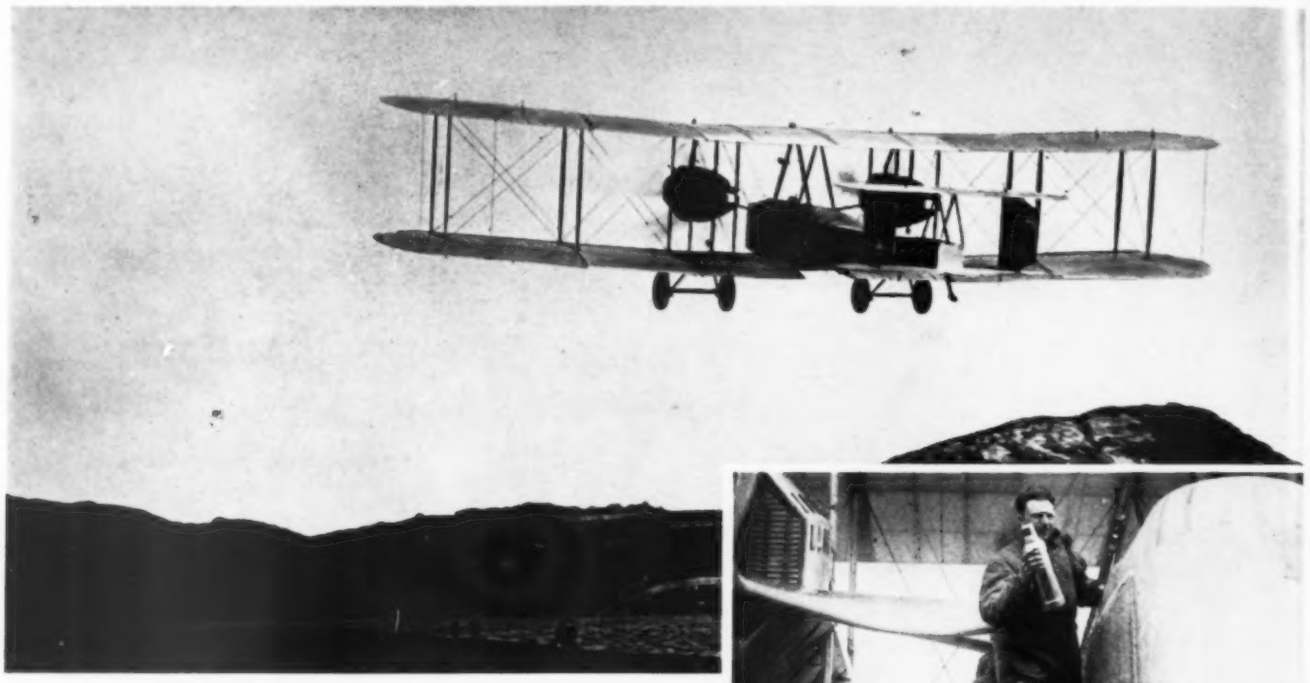

Captain John Alcock and Lieut. Arthur Whitten Brown, British Army Officers, hold the honor for first flying the Atlantic non-stop. Taking off from St. Johns, Newfoundland, they traveled 1,960 miles in 16 hours and 12 minutes. "We had a terrible journey and wonder we are here at all," records Alcock. "We scarcely saw sun, moon or stars."

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1903 50TH ANNIVERSARY OF THE AIRPLANE 1953

AIR Report

Significant Trends and News

YEAR-END ROUNDUP OF U. S. AIRCRAFT PRODUCTION by the Aircraft Industries Association shows military aircraft production totalled 9,000 planes in 1952 as against 5,000 in 1951 and 3,000 in 1950, with a monthly rate of about 1,000 planes for December expected to hold for the next year or two. Fifteen aircraft firms reported 1952 sales totaling $4.3 billion as against $2.6 billion for 1951 and anticipated billings of $5.5 billion for 1953. Net income for 1952 was $95,000,000 for these firms, or 2.2 per cent of sales. Aircraft industry employment totalled 1,000,000 with 750,000 working directly on aircraft while 250,000 were working for subcontractors and suppliers.

COMMERCIAL LIGHTPLANE PRODUCTION INCREASED 33 PER CENT IN 1952, the Aircraft Industries Association estimating 3,200 deliveries as against 2,477 for 1951. Transport aircraft output was estimated at some 400 units, of which about 240 were twin-engine executive types and 160 were 36-passenger or larger types.

PIPER AIRCRAFT PRODUCTION WILL REACH 10 SHIPS DAILY by March 1 at Lock Haven, highest output of any lightplane manufacturer since 1948. Sales are running far ahead of last year. . . . **FIFTY TWIN-ENGINE AERO COMMANDERS** were produced in 1952, with output at 8 per month in December—a record for a new concern delivering a new commercial design in this category.

CESSNA'S NEW TWIN was to make its first flight in January, with cross-country flights throughout the nation during the year and deliveries scheduled for 1954. . . . **REAPPOINTMENT OF CHARLES F. HORNE** as CAA administrator was urged by Aircraft Distributors and Manufacturers Association at its annual meeting. . . . **SIXTH REGION ADMINISTRATOR JOE MARIOTT** has been recommended by friends to the new administration for appointment as CAA administrator succeeding Horne. . . . **CHET MOULTON,** state aeronautics director for Idaho, and **FRANK TRUMBAUER,** 5th Region assistant to the regional CAA administrator, are being boomed by friends for appointment to the Civil Aeronautics Board.

RUSSIA HAS PRODUCED FIVE TIMES AS MANY AIRCRAFT as the U. S. during the last 5 years, says General Hoyt S. Vandenberg, USAF chief of staff. In 30-month build-up, U. S. industry has turned out 15,000 military planes but USAF has come only halfway in creating 143-wing air force. Over half its planes are obsolescent.

BEECH AIRCRAFT SALES TOTALLED $90,912,046 IN 1952, nearly three times the 1951 total of $32,797,829, and net income after taxes was $1,692,754 as against $737,424. Military production far exceeded commercial activities, civilian sales totalling $9,500,000. Mrs. Olive Ann Beech, president, said export volume reached $17.4 million, mostly to Canada. Sales to other countries constituted 40 per cent of all U. S. civilian personal aircraft exports.

SUPERSONIC SPEEDS BY THE USAF'S REPUBLIC XF-91 have been attained. It is powered with a GE J-47 turbo-jet rated at 5,200 lbs. thrust augmented by afterburning plus a Reaction Motors rocket engine rated at 6,000 lbs. thrust. . . . **DELIVERIES OF SWEPT-WING REPUBLIC F-84F THUNDERSTREAKS** have begun. The F-84F is powered with a J-65 Sapphire turbo-jet rated at 7,200 lbs. of thrust and produced by Curtiss-Wright and Buick. Roy T. Hurley, C-W chairman, says the F-84F "out-

(Continued on page 39)

USAF Orders Armed Temco T-35's for MDAP Program

Temco Aircraft Corp. at Dallas has received a U. S. Air Force order for a limited number of Temco T-35 Buckaroos, which will go to foreign countries under the Mutual Defense Assistance Pact. Robert McCulloch, president, said the 2-place, 165-hp. Buckaroo will be equipped to carry two machine guns, a gun camera, gun sight and ten 2.25-in. rockets with intervalometer fire control. Thus the trainers will be suitable for possible combat duty.

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

JANUARY, 1953 VOL. 39, No. 1

COVER: First photo of the new Model 180 Cessna, 150-mph., 4-place addition to the expanding line of Cessna "Business Liners." It is powered by a new-series 225-hp. Continental engine, with a constant-speed, controllable-pitch Hartzell propeller as standard equipment. Price: $12,950.
—(Cessna Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas—Telephone STerling 2125. EASTERN ADVERTISING MANAGER: ELLIOTT J. FARRELL, Room 443 Chanin Building, 122 E. 42nd Street, New York City. Telephone Murray Hill 3-6379

FLIGHT MAGAZINE, January, 1953, Vol. 39, No. 1. Published monthly. Publication office, P. O. Box 750 (1901 McKinney Ave.), Dallas 1, Texas. Price 35c single copy. Subscription rates: United States, one year $3.00; two years, $4.00; three years, $5.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879.

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Facts *and figures!..*

Figure:

This luscious, long-stemmed figure last fall earned its owner, Flame-Haired, Blue-Eyed Pat Blake, the title "Miss Lusty Girl of Texas." Also, the Variety Club voted hers the Most Beautiful Legs in Dallas, a decision backed unanimously by an informal panel of pilot-judges reviewing the case on Southwest Airmotive's front porch. Pat — all 19 years, 5' 7", and 122 lbs. of her — joins us in wishing you and yours many happy landings in 1953!

Fact:

America's leading manufacturers have entrusted their distributorships to Southwest Airmotive Company. They have found in SAC an aggressive, imaginative, square-dealing teammate. In this spirit, SAC proudly — and completely — represents such famous names as ARC, Bendix Products Division, Bendix Scintilla, BG, B. F. Goodrich, Champion, Eclipse Pioneer, Hamilton Standard, Pratt & Whitney Aircraft, Wright Aeronautical, and many others.

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EDITORIALS

BE IT RESOLVED

WE modestly suggest that all aviation trade organizations make a New Year's resolution to cut down on resolutions and produce more facts. All of us are aware of the large number of aviation meetings held each year. Every segment of the industry meets, and segments of segments meet. Sometimes several segments get together and meet. They seem to meet at the drop of a hat. At the last session of the meeting, or conference or convention they generally get together and pass fancy resolutions. Then they throw a cocktail party or banquet and go home. The resolutions are supposed to take care of everything.

It is impossible so early in the year to predict just what important aviation legislation is going to hit the hoppers. The widespread feeling that economy will rule under the new administration seems to suggest new impetus behind the proposal to put user charges on the Federal airways system, to reduce vitally important Federal functions and services and to cut all Federal agency budgets to the bone. If such an economy wave should hit the fan most anything can happen. The entire Federal airways system could be jeopardized and conceivably be militarized. Fancy sounding resolutions are not going to be of much use. We can no longer do battle with emotions or even strong convictions. Facts and cold logic alone will pay off.

In the past couple of years most of the progressive aviation legislation and proposed changes in Federal policies affecting aviation that died on the vine did so not because of anti-aviation forces but rather because of industry apathy and a sad lack of facts and intelligent presentation. ★ ★ ★

INTRA-INDUSTRY RELATIONS

DOES U. S. aviation need an "umbrella" organization? Or have the various segments of the industry become so specialized that there are only minor areas of mutual concern which can no longer justify an over-all organization supported by most of the trade associations, companies and individuals deeply concerned with aviation's general welfare?

These questions and all other coincident to the idea are constantly coming up and nobody seems to have satisfactory answers. When the National Air Council went out of business a year or so ago the National Aeronautic Association said it would again become the "umbrella" organization of U. S. aviation. Sincere, hard-working people have tried to make it such but like the NAC a few staunch believers are not enough to carry the load.

We are even more remote from industry unification by organization than we were ten or fifteen years ago, which is understandable when you figure the comparative size of the industry then and now. One large aircraft manufacturer employs more people than all people employed by aviation in the early thirties. Maybe we've grown too big and too diverse to ever again experience homogeneous character. For example, perhaps the large military manufacturers have interests that are more related to the pure munitions makers than to the interest of a flying farmer or local service airline operation. So maybe we are kidding ourselves by even entertaining the idea an "umbrella" organization is either possible or needed. History proves it isn't particularly wanted.

The most encouraging progress towards industry cooperation can be found in the Conference of National Aviation Organizations despite the fact it is not an action group. The healthy atmosphere created by fifteen national aviation association top-level leaders getting together a couple of times a year in Washington justifies even greater effort along this line. The interchange of information within the CNAO certainly warrants continued trade association support. Should it ever be decided U. S. aviation must create a true "umbrella" organization, chances are the decision will be made within the Conference of National Aviation Organizations although it could not take the initiative as an action group. CNAO remains the only vehicle in aviation where every interest and group can sit down with every other interest and "talk the situation over." Let's hope it not only survives but continues to contribute to the general good of aviation. ★ ★ ★

CUTTING THEIR OWN THROATS

THERE are scheduled airlines in the United States whose agents refuse to advise travelers of alternate airline routes to their destinations in case they can't handle the business. Some cases which have come to our attention appear to be in the category of a definite conspiracy, particularly in instances where trunk airline ticket counters actually lied to stranded passengers about additional service being available via local service routes.

Such practices, inconceivable as they might seem, hurt the air transportation business more than they do the individual customer. The average air traveler is not particularly interested in any one airline. He patronizes the line that gets him to his destination most expeditiously. It's all air transportation to him, and if he can't go the shortest route, he'll fly on slower equipment and make more stops because he'll still be hours ahead of any other method of transport.

Many airline companies don't seem to realize that there's plenty of business for everybody and when they can't handle it the next objective is to get the passengers on another line—just so they fly. Until that practice becomes general in domestic air transport, the industry is not operating in the public interest. When will our air transport industry grow up? ★ ★ ★

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In 1938, when near-sonic speeds were just a gleam in a designer's eye, the XF4U-1 was conceived. Designed around a 2,000 h.p. engine, it became the first fighter to reach 400 m.p.h.

Proved at Guadalcanal, it soon became the backbone of shore-based Marine and Naval air, supporting the relentless advance across the Pacific—Rabaul, Tarawa, Kwajalein, Eniwetok, Guam, Saipan and other history-making engagements.

At the close of 1944, the battle-proved Corsair was taken aboard aircraft carriers to meet the threat of improved Japanese aircraft. It went on to Okinawa and Iwo Jima and was on hand for the surrender in Tokyo Bay.

At the end of the war, the Corsair was the only piston-engine fighter whose performance for the Allies was advanced enough to warrant continued development on an uninterrupted post-war production schedule.

That's why it was ready for use by United Nations forces at the beginning of the Korean conflict in June 1950, and soon was accounting for 82% of all close air support sorties flown by Navy and Marine pilots against targets assigned by air support controllers in Korea.

Since the Corsair was first wheeled from the production lines, more than 12,000 of the gull-winged craft have been built, including a large order for the French Navy just completed. During the years many engineering and production changes have been made—but it is still basically the same stout-hearted fighter it proved itself at Guadalcanal a decade ago.

The Corsair has been in continuous production longer than any other military airplane. And *still* this great veteran goes on making aviation history!

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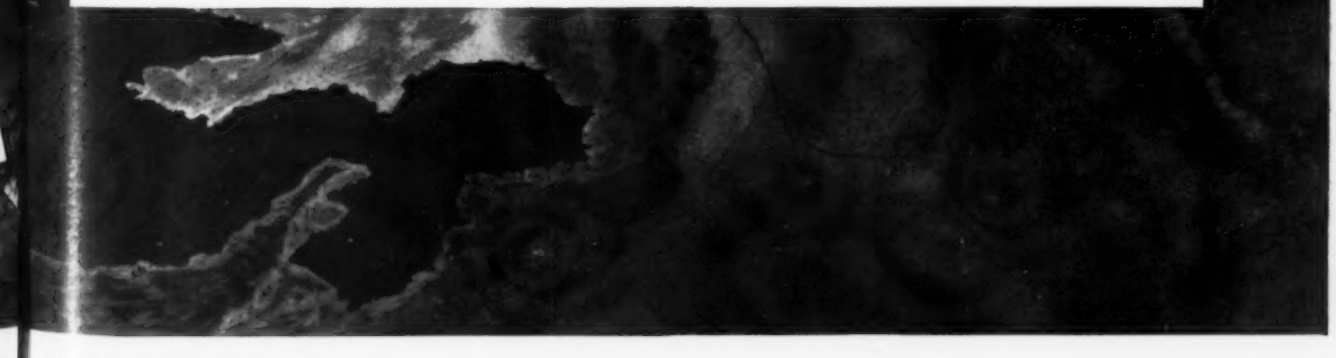

Cessna's New Model 180

It bears resemblance to the Model 170 but packs a lot more power and performance

By TOM ASHLEY

CESSNA'S long-awaited 4-place Model 180 made its first public appearance in January at the factory's annual meeting for distributors and dealers in Wichita—a new addition to the Cessna line featuring a new series 225-hp. Continental engine and an advertised cruising speed of over 150 mph. It resembles the familiar Model 170 in appearance, having the same configuration. But it is in a considerably higher category, having 36 per cent more horsepower, 25 per cent more cruising speed and is priced at $12,950, which is about 50 per cent above the $8,450, 145-hp., 120-mph. Model 170.

The new 180 gives Cessna three categories for its booming 1953 sales campaign which follows up a record-breaking year in 1952 when Cessna sold over 1,100 Model 170's in 10 months to lead the industry in business plane sales and become the world's largest lightplane producer. Number 2 in the Cessna line is the new Golden Year Model 170, announced in last month's FLIGHT MAGAZINE, and Number 3 is the familiar 5-place Model 190 series, which ranges in price from $13,995 to $21,750.

A fourth model will be added to the line during 1953. It will be Cessna's highly-engineered 5-place

Soon to become a familiar sight at airports across the nation, the No. 1 Model 180 was photographed here in front of the terminal at Hutchinson, Kansas. Standard equipment at $12,950 includes 88-in. diameter constant-speed, controllable-pitch Hartzell propeller with spinner.
—(FLIGHT MAGAZINE Photo)

Specifications and Performance
Model 180
Cessna Aircraft Company Data

Engine and Propeller: 6-cylinder Continental Model 470-A rated at 225 hp. at 2,600 rpm. Hartzell constant-speed, controllable-pitch, metal-blade propeller, with spinner.

Top Speed, mph	Over 165
Cruising Speed, mph.	Over 150
Stall Speed, power off, flap up, mph.	64
Stall Speed, power on, full flap, mph.	44
Cruising Range, hrs.	Over 4.5
Rate of Climb, sea level, fpm.	1,150
Service Ceiling, ft.	19,800
Gross Wt., lbs.	2,550
Empty Wt., lbs.	1,460
Useful Load, lbs.	1,090
Fuel Capacity, gals.	60
Baggage Cap., lbs.	120
Span, ft.	36
Length, ft.	26
Height, ft./ins.	7/6
Wing Area, sq. ft.	175
Wing Loading, lbs./sq. ft.	14.6
Power Loading, lbs./hp.	11.3

These two views emphasize Model 180 points of interest. Cowling for a new-series 225-hp. Continental engine is 4 inches closer to wing than cowl on Model 170. Free-blown windshield is longer and offers less drag. Flush riveting on wing, flush bolts on struts and wheel fairings also reduce drag. Note controllable cowl flap at bottom for less cooling drag. Squarish vertical tail is more efficient than familiar tail curves on other Cessnas. Model 180 has small, tubular-spring tailwheel strut and streamlined tail cone.

—(Cessna Photo at top. FLIGHT MAGAZINE Photo below.)

twin, the Model 310. Two have been built for the factory's flight test and certification program. The first of these was due to make its first flight in January. Cross-country flights to all sections of the nation will follow throughout the year, with actual deliveries scheduled to start in 1954. No price or performance details have been released. But we saw the first Model 310 in the experimental hangar recently and its extremely clean design, pioneering several aerodynamic features never before available in lightplanes, makes the little twin a picture of speed itself. In fact, it looks like a racing airplane with nothing sticking out anywhere.

Gathered in Wichita for introduction of Cessna's far-reaching 1953 production and sales program, distributors and dealers were surprised to find how much performance Tom Salter and his engineers had given the new 4-place Model 180. It was difficult to tell from a Model 170 at a casual glance, the same configuration and virtually the same dimensions being used. But up close, a number of significant changes became apparent.

The engine cowling is larger, housing Continental's new Model 470-A engine rated at 225 hp. for take-off at 2,600 rpm. Full details of this new engine series have not been announced by Continental, whose engineers worked closely with Cessna in pairing the engine and the Model 180 airplane.

It is described as different from the Continental E-225 which powers the Cessna "Bird Dog" liaison airplane for the Army, and was certificated only last month.

A constant-speed, controllable-pitch Hartzell propeller with metal blades and spinner is standard equipment on the Model 180 at the advertised airplane price of $12,950. This propeller is said to be extremely efficient with its 88-in. diameter (fixed-pitch McCauley props used on Model 170's have 76-in. diameter). It uses hydraulic oil pressure for low pitch and counterweights for high pitch.

Looking closer, many refinements in aerodynamic cleanness become apparent. The cowling is 4 inches closer to the wing, for example, and in addition to this a new "free-blown" windshield is longer and cleaner for less drag. Underneath the engine compartment, a controllable cowl flap reduces cooling drag.

Wheel fairings have been added in furtherance of the aerodynamic clean-up. These resemble the wheel fairings used on midget racing planes, which all utilize the thin, Cessna-type spring-steel landing struts.

The new 180's wing, of the same span and area as that on the Model 170, has been cleaned up considerably. This was achieved with a cleaner leading edge, flush riveting being used. Butt joints were used for the skin instead of laps, and where butt joints can not be used, rear laps replace the earlier forward laps. All inspection plates have been made to fit flush with the skin, strut bolts have all been filed off for flush fittings, and tie-down rings which formerly were hanging out in the breeze are flush-fitted.

Test Pilot Hank Waring shows travel of adjustable horizontal stabilizer on Model 180. Center of gravity is farther forward than in Model 170.
—(FLIGHT MAGAZINE Photo.)

A squarish vertical fin and rudder on the Model 180 replace the distinctive Cessna curves on the Model 170, and the rudder is more efficient. A new tail cone is cleaner.

All of these refinements have contributed to performance, as we learned in a hop with Hank Waring, chief of engineering flight test at Cessna.

At 5,000-ft. altitude, Hank trues out at 165 mph., using 23.3 inches of manifold pressure and 2,300 rpm. His slide rule says this power setting is 68.5 per cent of rated take-off power, or 154 hp. Fuel consumption at this setting is figured at 12 gals. per hr.

Going on up to 10,000-ft. altitude for cruising, the Model 180 gives Hank more economy at slightly less speed and considerably less power—10.5 gals. per hr. for fuel consumption at 18.3 ins. of manifold pressure and 2,300 rpm. for 119 hp., or 53 per cent of take-off power. Here the true air speed is 159 mph., or just at 160. These performance figures are for gross weight.

We tried an economy power setting at 6,000 ft., using 20 inches and 2,000 rpm., which is only 47.5 per cent of take-off power, or 107 hp., and our IAS was 126 mph. Outside air temperature was 40 degrees.

Stall speeds range from IAS readings of 10 mph. (44 mph. corrected for system error) with power and

(Continued on page 30)

Cessna suppliers gathered in Wichita for a preview of the Model 180. In top photo are Henry Hamm, Lear, Inc.; Arch Brown, Edo; Chet Degucz, Reading Battery; Frank Martin, Cessna; Clyde Norton, Lear; Paul Momenteller, Lear; Jack Leonard, Goodyear; Jack Moore, Reading Battery; Tom Salter, Cessna; Bob Clark, Goodyear; Joe Geuting, AIA; Robert Pollock, Scott; W. B. Crawford, U. S. Rubber; Don Mitchell, Rochester Manufacturing Co.; Flo Gierlich, Cessna; R. A. Armstrong, Michigan Seamless Tube; Rey Elliott, Cessna; A. S. Chalfant, Hanlon-Wilson Mufflers, and Dwane Wallace, Cessna president.

Cessna suppliers at Model 180 preview are also pictured above. In the group are Ozzie Kangas, Cessna; Dwane Wallace, Cessna president; Dave Bierman, Hartzell Propellers; Sam Bigony, Gene Gillespie, Floyd Sisto and Don Frederick, Jacobs Engines; Dwane Yates and Martin Johnsen, Shakespeare Controls; James Buckley, Bendix; Sid Gamsu, McCauley Propellers; R. B. McKee, Aluminum Co. of America; Ben Horschler, Skyways Magazine; Jack Zook, Cessna; Bill Dewar, Harvey Aluminum; George Leiendecker, Stewart-Warner; W. S. Robertson, duPont; H. E. Morrison, Crucible Steel; Gil Quinby, Narco; Clarence Manning, Reynolds Metals; John Menz, Kaiser Aluminum; E. S. Gallagher, General Electric, and Del Roskam, Cessna.
—(Cessna Photos.)

Panel in Model 180 has cut-outs for optional instruments and 2 extra radios. Cabin features new ducted air system with multiple outlets. Doors are 36 inches wide.
—(Cessna Photo.)

"Snow White" is one of the trainers used at the Bell factory for commercial students. A Japanese student, who traveled to Texas from Tokyo to take the course, is shown here.
—(Bell Photo.)

By **RICHARD BATCHELDER**
Supervisor, Bell Helicopter Training School

Commercial 'Copter Training

WORLD-WIDE acceptance and utilization of commercial helicopters has created a pressing and increasing need for qualified personnel to fly and maintain this newest member of the air transportation field.

Bell Aircraft Corporation anticipated this need as early as June, 1946, when the company established its helicopter training school. Since then—and the school has been in continuous operation—233 pilots and 304 mechanics have completed Bell courses.

In addition to the Bell school, a number of Bell helicopter operators are conducting training programs. These include Lewis Air College, Lockport, Ill.; New England Helicopter Service, Hillsgrove, R. I.; Currey Flying Service, Galesburg, Ill.; Chicago Seaplane Base, Chicago, Ill.; Okanagan Helicopters, Ltd., Vancouver, B. C., Canada; and Spartan Air Service, Ottawa, Ont., Canada.

Tuition for the Bell Helicopter School's 25- to 30-hour pilot course is $2,250. Hourly flight training for shorter courses is $75. A student pilot with previous helicopter experience, usually in military service, may enroll for a 10-hour course.

Pilots without previous helicopter experience may enroll in the full flight course if they meet the following requirements:

1. Possess a valid commercial pilot's license.
2. Have over 1,000 hours of fixed-wing first-pilot time.
3. Provide proper personal references.

Emphasis in the pilot course includes full autorotation to the ground under all conditions of flight. Thorough knowledge of the helicopter and CAA flight manual is also stressed.

Student mechanics must complete 240 hours of supervised instruction to qualify as a helicopter mechanic. The course includes a minimum of 216 hours of actual helicopter maintenance and overhaul of all major helicopter components. Tuition for the course is $836.

An applicant for helicopter maintenance training must meet the following requirements:

1. Have a valid A & E license.
2. Have a minimum of one year's experience under that license (not including school time).
3. Provide proper personal references.

Consideration is given to both pilot and mechanic applicants who have special aptitudes and practical experience which may be equivalent to set requirements. In this way, no potentially qualified student is prohibited from obtaining training.

Pilot training is divided into two almost equal parts, with about 13 hours of dual and a total of 12 hours solo flight. During all of the flight instruction period, autorotation landings are emphasized and the student pilot must become proficient in this technique. The time required to become thoroughly familiar with autorotation is variable according to the individual. Some are considered proficient after just a few landings, while others require longer periods of concentrated effort.

Average time before first solo flight is about six hours. A few students have made solo flights after four hours of dual instruction and others have needed as many as eight hours preparation for their solo debut.

The helicopter mechanics' course is conducted over a six-week period which is divided into three sections. The first two weeks are devoted to disassembly and reassembly of all major components excluding engine, electrical and airframe. After becoming familiar with all parts and before proceeding to the next phase of the course, the students must pass an "association" examination.

In this examination the instructor names a part and the student is required to name all adjacent parts. After successful completion of this examination, the student enters his second two-week phase of training.

In supervised shop sessions, a complete mock-up minus electrical and fuel systems is disassembled down to the last bolt by the students. Then, during a lunch period, the parts are separated and completely mixed up by an instructor. Upon return to class, the students must identify all parts and reassemble the copter.

(Continued on page 28)

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"Little Henry," an experimental Air Force helicopter developed by McDonnell Aircraft Corp., with tip-mounted ram-jet engines, is shown in flight at left with the author at the controls. He is in charge of McDonnell's ram-jet helicopter flight test.

The Case for Small Ram-Jet 'Copters

By **CHARLES R. WOOD, JR.**
McDonnell Aircraft Corporation

SINCE 1945, over 100,000 man-hours of experience have been accumulated by one manufacturer in the development of ram-jet engines for small helicopters of very simple design such as "Little Henry." Development of the ram-jet helicopter has progressed concurrently with the development of the ram-jet engines. Steady improvements in the ram-jets have improved the operating flight characteristics and performance of the flight article and have led to the attainment of satisfactory autorotation or power-off flight characteristics. Design parameters applicable to many types of ram-jet rotors for varied sized ram-jet helicopters have been established and proven by more than 150 hours of ground and flight tests.

Specifications for a simple, light, ram-jet helicopter could be as follows:

Top Speed, sea level, mph.	103.5
Cruising Speed at sea level, mph.	74.7
Max. Endurance, hrs.	1.5
Hovering Ceiling OGE*, ft.	8,000
Vertical rate of climb, sea level, fpm.	1,200
Thrust per Ram-Jet, sea level, lbs.	40
Thrust per Ram-Jet, 10,000 ft., lbs.	30
Gross Weight, lbs.	950
Empty Weight, lbs.	300
Payload (with 20-n.mi. range), lbs.	400
Rotor Diameter, ft.	27

*OGE—outside of ground effect.

Design and Maintenance Advantages

The ram-jet helicopter combines simplicity, compactness, light weight and performance for efficient, short range transporting of heavy payload. Ram-jet helicopters will operate on readily available fuels of the automotive, aviation or jet type. Superior availability under extreme temperature conditions is assured by the elimination of engine warm-up, lubrication, bearing replacement, and servicing of blades and shock struts.

Ram-jet helicopters can be designed and built of many sizes for a multitude of commercial operations. Small, lightweight models will probably precede the larger cargo carrying types. First costs of ram-jet helicopters should be appreciably lower than for conventional reciprocating engine-powered models because of the reduced number of components of simple design that lend themselves to large production.

Components will be installed readily accessible for inspection, maintenance repair or replacement. A maximum interchangeability of parts will be provided. Parts that are subject to possible replacement as a result of operational damage are designed for low production costs. The simple ram-jet propulsion system, all-metal blades, tilting rotor head and the absence of complex gear boxes, flap and lag hinges eliminate maintenance problems common to conventional service-type helicop-

ters. There is no lubrication requirement other than grease packing of the accessory gear box. Skid type landing gear eliminates maintenance of wheels, shock struts and tires. Maintenance and component replacement will be possible in a minimum of time by maintenance personnel of limited experience utilizing only common hand tools.

Because of their simplified controllability and satisfactory power-off or emergency flight characteristics, small ram-jet helicopters can be safely flown by pilots with a minimum of experience.

Greater Payloads for Utilization

Small ram-jet helicopters should have immediate acceptance for agricultural crop control. The agricultural helicopter has been proven useful and will take its place on the farm when proven helicopters are available at lower first cost. The ram-jet agricultural helicopter will be capable of operating safely, efficiently, and economically regardless of terrain or surface conditions. It can land at the scene of work to take on fuel and chemicals. By its ability to carry a payload greater than comparable existing types of aerial equipment, the ram-jet helicopter should permit expansion of aerial crop control, a profitable new field.

Other operations for which the ram-jet helicopter is potentially suitable include:

1. Aerial taxi cab service.
2. Air mail delivery.
3. Air freight service.
4. Rapid communication between inaccessible spots.
5. Helicopter flight training.
6. Miscellaneous special operations.

An inexpensive ram-jet helicopter may place the helicopter within the financial reach of many. The ram-jet engine is a simple, streamlined tube; the air enters in front, fuel is injected, burned and expended, and the air is ejected out of the rear with increased jet thrust. Ram-jets are simple, have no moving parts, and are easy to build and maintain. For emphasis, it may be repeated that ram-jets installed at the tip of each rotor eliminate the need for transmission gearing and other complicated, expensive mechanical components. Ram-jets can burn many fuels. They do burn more fuel, but this is somewhat compensated for by the lower first cost of the ram-jet helicopter and the greatly reduced maintenance costs.

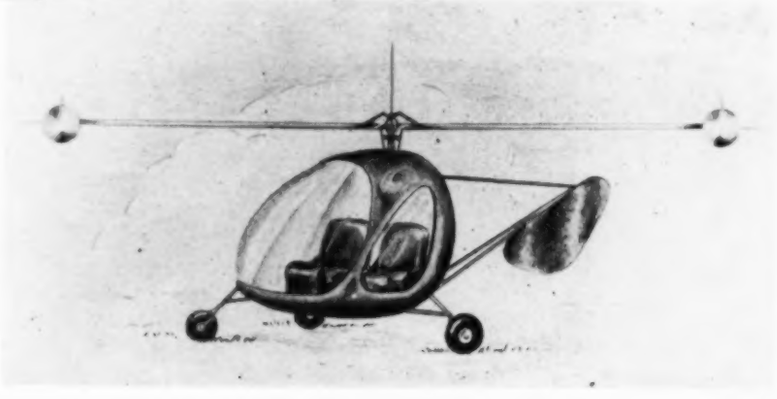
It has been said that the U. S. helicopter industry is ascending vertically. There are unfilled civilian helicopter orders because of the higher priority of the services. The helicopter potential has only been scratched. A new branch of aviation industry is being established. As Larry Bell so aptly said, "A helicopter flies like a bird instead of like a bat out of hell." The availability of the low-cost helicopter depends upon many factors. Of first order of importance is that of public acceptance. Public acceptance will be influenced by the availability of heliports throughout metropolitan areas. I, personally, forecast the day of helicopters for the masses.

(The above are views of the author and do not necessarily reflect the views of McDonnell Aircraft Corporation.)

★ ★ ★

Para-Copter Uses Pulse-Jets

STRAP-ON helicopters have been sketched before, but George W. von Schmidt, Long Island Helicopter Engineering, North Bellmore, New York, says the "Para-Copter" he sketched above has already flown 87.32 hrs. Its 13-ft.-7-in. blades are hinged to fold so one man can carry the 49-lb. device, powered with tip-mounted pulse-jet engines rated at 75 lbs. of thrust each. Flight duration of 72 mins. is claimed for 30 gals. of fuel, carried in two 15-gal. bottles which are pressurized to force fuel through a rotor seal to tip-mounted engines. Two 4.5-volt dry-cell batteries and a high-tension coil provide spark for starting by push-button. Gauges include (1) fuel consumption, (2) fuel quantity and (3) altitude. Performance is said to include 875-fpm. rate of climb, 12,000-ft. ceiling, 100-mph. top speed and "very safe autorotation for landing without power from either one or both engines." It has dual fuel and ignition systems. Schmidt seeks an Air Force contract for the Para-Copter and a 2-place jet 'copter sketched below. ★ ★



What the Customers Want

Optimism over 1953 comes from better transportation values in lightplanes

By GEORGE E. HADDAWAY

THE utility airplane market is on firm ground again, up from the post-Korea slump of 1950 when annual postwar production fell to a new low because of the material allocations program. It is safe to say that 1953 might be the most fruitful year in lightplane history.

That does not necessarily mean it will be the largest in unit or dollar volume. It probably won't be. But it does suggest that the business coming up will be the kind that builds strong, stable and profitable enterprise. The right kind of people are buying airplanes and using them properly. That's the main reason for our confident optimism about the outlook for the new year.

As one of our older airplane salesman friends put it recently, "We're calling on folks now who would have thrown you out of their offices five years ago. Prospects are where you find them—everywhere. You run into them at parties, in banks, in the drugstore, on street corners, on trains and planes. We've never had the degree of public acceptance of lightplane flying that exists today."

There are many reasons for this happy situation. One of them certainly is the fact that the airplane manufacturers are giving the buyer more for his money than ever before in the history of this business. When you look back at the years of 1947 and 1946 you wonder where all the customers came from. A comparison of the airplanes sold then and now reveals that a transportation revolution has taken place since the two-place jobs went by the board.

We recently spent some time in the new Piper and Cessna models for 1953. The comfort, ease-of-handling, performance and eye appeal of these new craft are unprecedented. To our way of thinking the public has been 'way ahead of the industry, waiting for the

People don't buy just to say they own an airplane—they want transportation and the 1953 Piper Tri-Pacer provides it like never before.
—(Piper Photo by Hans Groenhoff.)

Transportation usefulness includes cargo. The 1953 Piper Tri-Pacer, with two large doors and exceptional roominess, offers outstanding versatility. Piper production will reach 10 a day by March 1.

—(Piper Photo by Hans Groenhoff.)

day they could get the kind of useful, comfortable merchandise now being manufactured at the amazingly low prices being asked. The public doesn't particularly want airplanes just to own an airplane. The public wants transportation. That's what the modern lightplane now provides like it never provided before.

Jake Miller, Piper sales manager, says that 95 per cent of today's Piper purchasers use their planes for business. The growing use of radio navigation equipment and instrumentation is revealed by the fact that 64 per cent of the new Pipers are ordered with full instrumentation and radio. Some 23 per cent of 1952 customers were first-time purchasers and the average annual use per plane is 325 hours or 40,000 miles each year. That spells utilization.

We flew home in the first 1953 Piper Super Custom Tri-Pacer from the Piper factory in Pennsylvania last November following the annual distributors' meeting. Our "host" was Lloyd Brown, this year's champion Piper quota-buster and Piper distributor for southwestern Texas and northern Mexico with headquarters at San Antonio. Brownie's quota for 1952 was 20 airplanes. He sold 45. Late last month just six weeks after our delivery flight he told us he had delivered five 1953 models with 18 more on order. He had several letters from other Piper distributors looking for "extra" 1953 models or trades in delivery dates so they could satisfy unexpected demands. Little wonder that Piper is scheduling the highest daily rate of lightplane production by any manufacturer since 1948. They expect to hit 10 a day by the first of March. Before January 1, distributors had sent in 1953 orders equal to half the entire 1952 production quota.

At Cessna's recent unveiling of the Model 180, president Dwane Wallace said he expected a 50 per cent boost in lightplane production for the coming year. Cessna's terrific 1952 sales campaign, covered previously in these pages during the past months, will be projected into 1953 with no let-up in advertising, sales promotional effort and prospect research. Commercial deliveries at Cessna now account for 30 per cent of total production despite the urgency of war production.

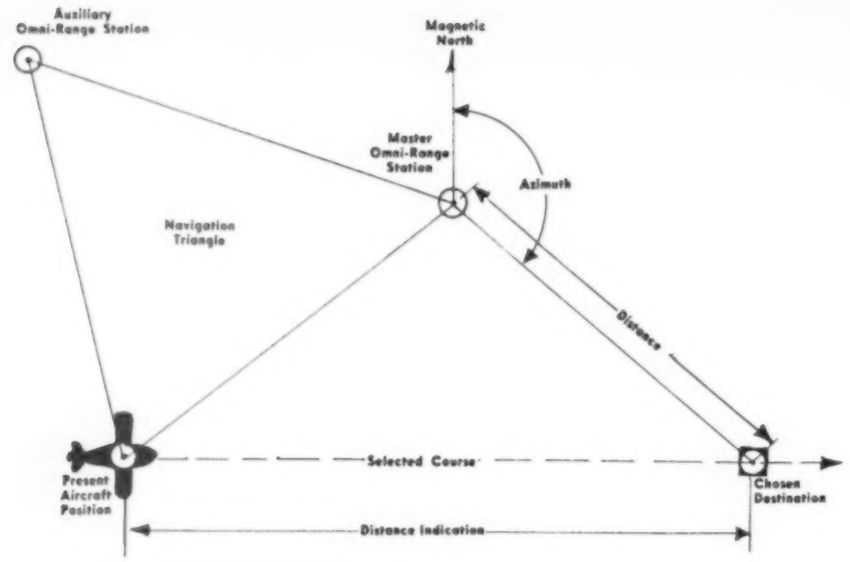
It was encouraging to have our market opinions and optimistic outlook for '53 confirmed by star Piper salesman Lloyd Brown six weeks after our delivery flight. His territory has been hard hit by a three-year drought. Dollars are still scarce in Mexico, but modern transportation is even more scarce and a growing number of Mexicans somehow managed to dig up the eight-and-a-half pesos to the one American dollar in order to buy a Super Cub, a duster or Pacer. Mexico is also a profitable outlet for the used equipment Brown takes in on trades. Domestically, the market is also strong due to high resale values.

He admits that immediately after World War II the potential customers were ahead of the industry, that the wrinkles in his mid-section didn't start to disappear until Piper came out with the Vagabond and followed with the original Clipper. He almost went broke trying to peddle two-place jobs and the "family" Cruiser. They just wouldn't do what the customer wanted.

We reminded Brown that a lot of people say you can't sell airplanes during the winter months. That's bosh, he says. The business is no longer seasonal. People who buy airplanes today plan ahead. They don't rush out and buy helter-skelter, expecting delivery tomorrow. That's why his promise of April deliveries on December purchases affect only a small percentage of sales. People buy a plane much as they do a tractor or a washing machine — because they need it. To him the ideal lightplane market has finally arrived because of that fact. His customers buy, use the airplane properly, are satisfied and help sell others. Repeat sales are a part of the present healthy aspects of the market. And enough modern airplanes are being delivered to make the parts business a very profitable enterprise. Growing engine and airplane parts sales are a substantial part of the present stability in our lightplane distribution system.

Brown believes we still have a long way to go in building up better dealer organizations. It is the principal weak

(Continued on page 32)



There's no transmitter of any kind at the "chosen destination" in this sketch. But an instrument pilot using the new Collins navigation computer can hit it on the nose. The computer first provides an aircraft position fix. It then gives continuous aircraft-to-destination distance measurement in miles, "to-from" indication, and course-line right-left steering information to reach the destination. When the computer's mileage counter unwinds to zero and a "to-from" meter drops to "from," the destination has been reached.

The Collins Navigation Computer

A new development for instrument flight to any airport within the area of paired omni stations

PRECISION aircraft radio navigation, with automatic distance measuring, can now be made to airports which do not have omni or other transmitters, thanks to a significant new computer developed for the commercial market by Collins Radio Company.

What makes possible this interesting achievement is the computer's full navigation use of an aircraft's dual omni receiver installation. The sketch at the top of this page, with the equipment pictured with this article, illustrate the functions of the new Collins computing system.

FIRST STEP: Two local omnis are tuned in to obtain a position fix by triangulation. The computer solves this triangle to obtain the distance to one of the stations, referred to as the master station.

STEP TWO: Using the azimuth and distance knobs of a Collins "Waypoint Control Head," the pilot dials (1) the bearing and (2) the distance from the master station to the waypoint, obtaining these two items from his map.

STEP THREE: The pilot dials his desired course to the waypoint by using the Collins "Course Indicator." This direct course can be found at any time by simply rotating the course knob to center the course bar.

Thus set up, the computer system gives a continuous position fix on the aircraft. A Collins "Distance Indicator" reading from 0 to 150 miles ticks off the mileage to the waypoint. Right-left steering indications, "to-from" indication and a pictorial presentation of the aircraft navigation situation are presented by the Collins Course Indicator. When the rotating hand of the Distance Indicator reaches zero while this Course Indicator is flown, the aircraft has reached the chosen destination.

An alternate use of the Collins computer can be made in an ILS approach to an airport, the computer giving a continuous reading of distance to touchdown. This arrangement uses a cross bearing from an omni range which is located off the runway line and within the local area. The Distance Indicator reads zero to 15 miles for this operation, rather than zero to 150 miles as in navigation.

To reduce the pilot's cockpit workload and to minimize the possibility of human error in feeding data into the computer, Collins has included in the computer an ingenious card-reference data system. Plastic, IBM-type cards, pre-coded with punch holes, are inserted in a Collins "Card Reader," which reads the holes to automatically tune the two navigation receivers along the route and to obtain input data required by the computer. Data for 5 different station pairs are accommodated on a single card. The station pair is selected by positioning the card so that station call letters appear in a window of the card reader. In one form of card layout, a chosen station acts as a master for the entire card with each of 5 nearby stations acting as an auxiliary in successive pairings. Route cards can be used in

which pairs of stations are chosen which lie appropriately spaced along the route.

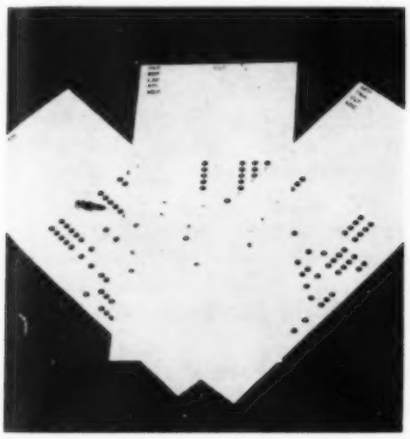
In a custom modification offered by Collins, waypoint coordinates can be pre-coded into the punched cards, eliminating the need for the Waypoint Selector.

In another custom modification, use of ADF's can replace the VOR's, either one or both.

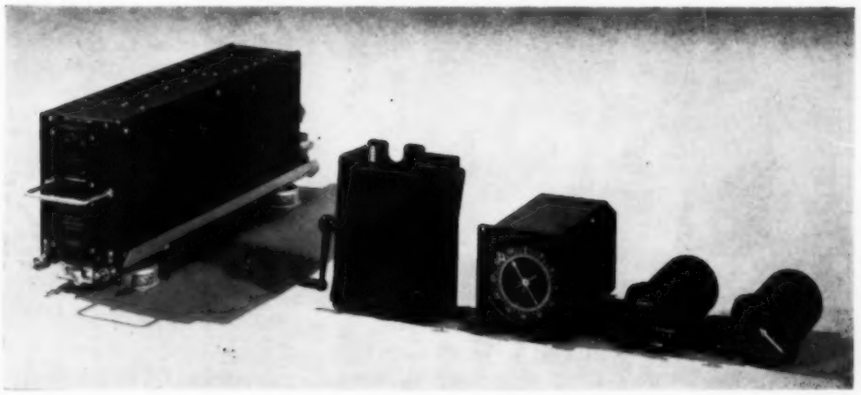
Consideration of the useful signal area of available omni ranges for the altitude of flight will influence the pilot's choice of auxiliary stations. Because of the nature of the computer solution, it is also necessary that the master omni-bearing and its reciprocal differ from the auxiliary bearing by at least 15 degrees for satisfactory computation. A flag alarm in the Distance Indicator signals violation of this limitation. Collins explains that this flag region lies along the line through the two stations in use and contracts to a point at each station. Proper choice of stations will avoid this region or minimize the time of flight through it.

The Collins equipment is making its appearance in advance of the general usage of CAA omni-distance measuring equipment (DME), for what is technically known as "rho-theta" computations in navigation. Since it performs its own distance measuring by triangulation with two omni's used for primary data, it provides "theta-theta" computation independently of ground facilities at the chosen destination. However, it can be used for either rho-theta or theta-theta computations as desired.

Collins says the complete installation weighs about 34 lbs. This includes Computer Chassis, 21 lbs.; Card Reader, 5 lbs.; Waypoint Selector, 2.6 lbs.; Distance Indicator, 1.8 lbs.; and connections. Power source is 115 volts, 400 cycles, single phase and 28 volts DC. ★ ★ ★

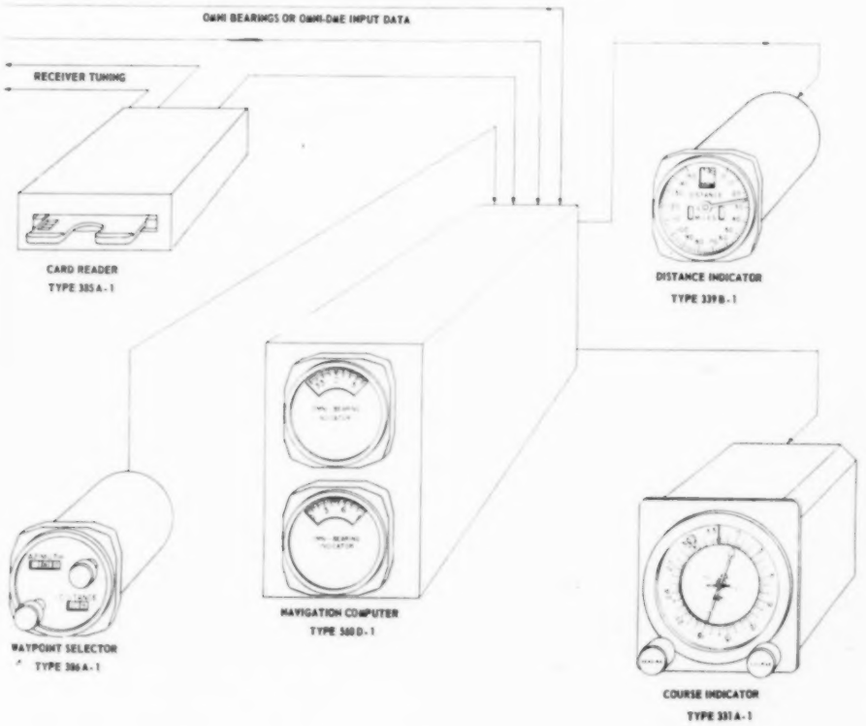


Plastic, IBM-type punched-cards for information storage supply pre-coded input data for automatic computer operation. Each contains data for 5 different omni station pairings.



Collins Model 560C-1 Navigation Computer components above, from left to right, are the Computer, Card Reader, Course Indicator, Waypoint Selector and Distance Indicator. Arrows in diagram below trace flow of data through the system. "Input" data flow is from dual omni receivers, coded cards and Waypoint Selector (bearing and distance from master omni to destination). Computer's "output" flow is to Distance Indicator and to Course Indicator. This last instrument provides for omni and arbitrary course selection, to-from and course-line deviation indications. It also provides indication of compass heading and means for heading selection. It combines all these to give a map-like picture of the navigation situation.

The Collins Card Reader has a handle for either manual or automatic computer operation. Cards for various routes or approaches can be changed instantaneously. This device "reads" pre-coded cards to automatically tune omni receivers and furnish certain other input data for the computer, reducing the cockpit work-load for the pilot and lessening the possibility of human error.



We're Ready For A Great New Year

We're starting the New Year in better shape than ever—we have better airplanes, better performance, and more satisfied customers. So the Authorized Cessna Service Operators listed below proudly welcome 1953 with its challenges and its promises!

It adds up to this: We can do more for Cessna owners. For example, we have the new models—the 1953 Golden Year 170 and the outstanding new Model 180 with its high performance. But our specialty is keeping ALL Cessnas, new or old, in the best possible condition for dependable, comfortable and safe transportation. We do this with our famous Flat Rate Service, which guarantees every Cessna owner three things:

1. You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all your maintenance needs.
2. You get genuine Cessna parts and factory-trained workmanship.
3. You save money and time and we stand behind every job for your fullest satisfaction.

More and more Cessna owners are recognizing the importance of these Flat Rate Service advantages.

To make the most of your Cessna's usefulness, visit the Authorized Cessna Service Stations listed below.

These progressive Cessna Authorized Service Shops offer flat-rate service.

Aircraft Sales Company
Meacham Field
Fort Worth, Texas

Aviation, Inc.
15th Street Air Park
Tulsa, Oklahoma

Champ's Flying Service
Municipal Airport
El Paso, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
Municipal Airport
Houston—Texas—San Benito

Dal-Tex Aviation, Inc.
Highland Park Airport, Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
New Municipal Airport
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airport
Midland, Texas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

NEW "GOLDEN YEAR" CESSNA 170

New Appearance . . . New Performance . . . New Utility for Business

America's Largest-Selling Private Plane

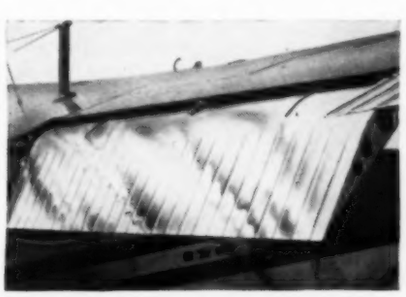
OFFERS EVEN MORE THAN BEFORE!

Already the airplane *the most people* find the most practical for their business and personal needs . . . Cessna's great 170 is now even further improved for Flying's 50th Anniversary Year.

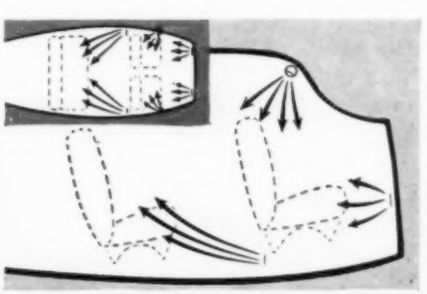
There's *new beauty* in the redesigned cowling, the 1953 striping, the new interiors—*new convenience* in the beautiful new instrument panel with scientifically grouped push buttons, space for more instruments with engineered lighting—*new comfort* in the all-new heating and ventilating system.

And in addition to this the 170 has all of the advantages that made it America's largest-selling personal plane—including a price tag that's still several thousand dollars less than any other 4-place, all-metal plane on the market. Be *sure* to see it. Consult your Classified Telephone directory for the name of your nearest Cessna dealer . . . or mail coupon below.

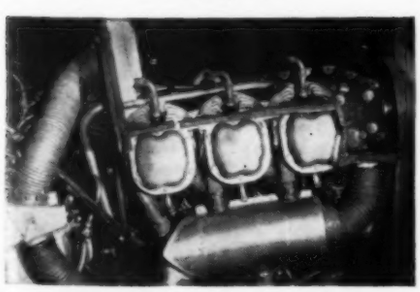
MC CAULEY MET-L-PROP
Now *Standard* Equipment



FULL-RANGE, PARA-LIFT FLAPS
Make Landings Safer!



NEW HEATING & VENTILATING
System . . . Living-Room Comfort!



ERVICED-PROVED, 6-CYLINDER
45-H.P. Continental Engine

BEAUTIFUL NEW INTERIORS
Plenty of Room for 4

Cessna 170

Cessna Aircraft Company
Dept. FM-1
Wichita, Kansas

Please send information on the new Golden Year Cessna 170 ____; 190 Series ____. I am interested in a Cessna for business ____ farming ____ other ____

Name _____

Address _____

City _____ State ____

Scenes at 13th NATA Convention

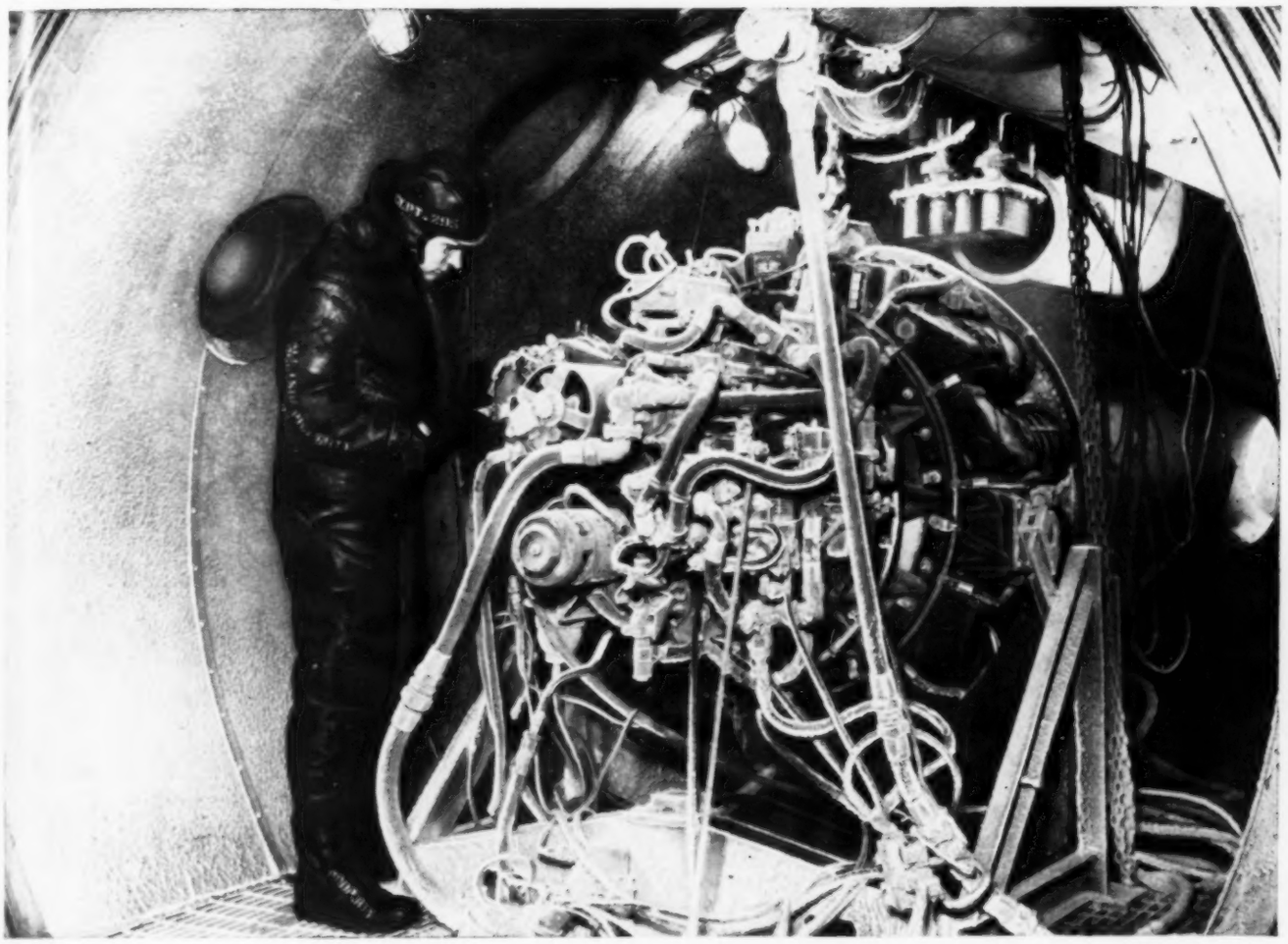
Optimism over the 1953 business outlook in general aviation keynoted the 13th annual convention of the National Aviation Trades Association held in Hollywood, California, recently. New officers include Harland S. Herrin, Morrison Flying Service, Helena, Montana, president; Oscar Hostetter, Thomasville, Pennsylvania, eastern vice president; Frank Shelton, Anderson Aviation, Phoenix, western vice president, and David Finger, A - monk, New York, treasurer.

MANUFACTURERS AND AIRLINE REPRESENTATIVES were invited guests at one of the NATA luncheons, during which this group was seen at head table. Seated, left to right, are Ben Mauro, Taylorcraft president; A. R. Bone, Jr., American Airlines; NATA Vice President Frank Shelton and NATA President Robert S. Northington. Standing, left to right, are Ralph Kummer, Hiller Helicopters; Jack Marler, Beechcraft; W. T. Piper, and R. Tigerman, Cessna. —(NATA Photo.)

FIGURING PROMINENTLY IN NATA CONVENTION SESSIONS were (left to right) Ed Marshall, South Carolina Aviation Trades Association; Tom Ferguson, Georgia chapter; John Griffin of Massachusetts group and NATA vice president, and Don Larson from Washington State Aviation Association. —(NATA Photo.)

HOLLYWOOD BEAUTIES participating in 13th Annual NATA Convention at Hollywood-Roosevelt Hotel included Miss Lee Wilson, chosen as "Miss NATA." She is shown here with NATA's new president, Harland S. Herrin, Morrison Flying Service, Helena, Montana. —(NATA Photo.)

CAA ADMINISTRATOR CHARLES F. HORNE was chief speaker at this luncheon, which honored the aviation press.



It never gets this cold upstairs

Up in jet country—10 miles above the earth—it gets mighty cold.

Even when these planes are operating only two or three miles up, temperatures drop below zero. And when they reach their ceiling, the thermometer stands at about minus 67 degrees F.

Because jets range far, wide and high, we have to be certain the engines will start at even the lowest temperatures and perform well where the air is thin. So here at Allison we have testing facilities which put our turbine engines through every temperature extreme they'll meet in the air.

In the low-temperature-starting test chamber shown above, designed and built by Allison, the toluol (can't use mercury at these low temperatures) drops to 100 degrees below zero—far colder than the lowest temperature the jets will ever encounter. And prior to these tests of the complete engine, we check the various systems and parts to be sure that they will perform properly under the most severe atmospheric conditions of temperature, altitude, humidity—even including exposure to sand, fungus and salt spray.

In addition to these laboratory tests, our engineers are assigned to anti-icing tests of Allison engines at Mt. Washington, New Hampshire, cold-starting tests at Ladd Air Force Base, Alaska, and low-temperature tests of the complete airplane in the huge cold chambers at Eglin Air Force Base, Florida.

Climatic testing is just part of the extensive test program for our engines—tests that meet or exceed military specifications. This comprehensive testing, coupled with our continuing program of design improvement, is another reason why pilots put their confidence in Allison jets.

GM GENERAL MOTORS

Allison

DIVISION OF GENERAL MOTORS

INDIANAPOLIS, INDIANA

World's most experienced designer and builder of aircraft turbine engines—*J35 and J71 Axial, J33 Centrifugal Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines*

MERCHANDISING PANEL AT ADMA CONVENTION is shown above in session. Left to right are Tom Davis, Piedmont Aviation, Winston-Salem, N. C.; E. M. Eickman, Goodyear, Akron; Earle Scott, Scott Aviation Corp., Lancaster, N. Y.; Lawrence F. Zygmunt, General Aircraft Supply, Detroit, and R. B. Kenty, Air Associates, Dallas.
—(ADMA Photo.)

NEW PRESIDENT L. W. TREES, Bendix-Scintilla, gets the gavel from George W. Jalonick of Southwest Airmotive, retiring president.
—(ADMA Photo.)

Horne's Re-appointment Urged at ADMA Meet

More than 300 private conferences between individual distributors and manufacturers were conducted as a feature of the Aviation Distributors and Manufacturers Association's 10th annual meeting in Florida last month. The meeting also voted endorsement of CAA Administrator Charles F. Horne's plans for general aviation and urged its members to write President-elect Eisenhower and Commerce Secretary-designate Sinclair Weeks requesting Horne's re-appointment. Wiley Wright of Washington, executive secretary of the CAA's advisory committee, addressed the meeting. ★★

ADMA OFFICERS AND DIRECTORS FOR COMING YEAR include those shown above. Seated, left to right, are Jim Riddle, Narco, Ambler, Pa., vice president; L. W. Trees, Bendix-Scintilla, Sidney, N. Y., president, and Larry Zygmunt, General Aircraft Supply, Detroit, vice president. Standing, left to right, are L. J. Bollo, Standard Aircraft Equipment, Mineola, N. Y., director; R. G. Diehl, MacWhyte Co., Kenosha, Wisc., director, and Don Richards, Philadelphia, Pa., executive secretary.
—(ADMA Photo.)

HELICOPTER TRAINING

(Continued from page 17)

The third phase of the training program is devoted to maintenance problems and to aerodynamics associated with mechanical maintenance, including main and tail-rotor rigging, blade tracking and control linkage and operation.

A final practical examination in which the student is assigned two maintenance jobs completes the training program. A grade of 80 per cent is required as passing and the course allows 33⅓ per cent for attitude, 33⅓ per cent for written and oral tests and 33⅓ per cent for practical work.

A certificate of achievement is issued to graduate helicopter mechanics by the Bell school. This certificate is recognized by CAA and many foreign countries.

Upon completion of his training, a helicopter mechanic is qualified to conduct all necessary inspection and overhaul procedures on the Bell Model 47 helicopter. Briefly, these include:

DAILY: Visual inspection for security of all assemblies; check operation of all controls; check fuel and oil; check blades for secure covering; check for leaks in oil and fuel systems, and check airframe for cracks, bends.

EVERY 25, 50 AND 75 HOURS: Repeat daily inspection; complete lubrication; check all assemblies for wear, abrasions, dents, cracks, deterioration, security; remove, clean and inspect oil and fuel strainers; inspect electrical system for leaks and security and deterioration; check instrument operation and markings, and check controls for binding, throws, security, settings and lost motion.

EVERY 100 HOURS: Repeat 25, 50 and 75; replace retaining bolt and bearings in tail rotor hub installation; replace bronze pitch change rod bushing if over 1/16-in. movement; inspect engine, valve clearances, magnetos, plugs; replace fan belts, and check drives for end play, oil leaks and operation.

EVERY 300 AND 600 HOURS: Repeat 100 hr.; remove, disassemble and inspect hub assembly (M/R) (aluminum hub at 300 hrs., steel hub at 600 hrs.); remove, disassemble and inspect mast and assembly; thoroughly inspect blades and attaching parts, and remove and disassemble and inspect T/R hub, gear box, shaft and housing.

EVERY 300 AND 600 HOURS: Overhaul engine and thoroughly inspect all associated assemblies and systems; inspect and overhaul transmission and drive assemblies, and overhaul starter and generator. ★ ★ ★

NATION WIDE
SALES AND SERVICE
ORGANIZATION TO SERVE YOU . . .

Business men who buy Commanders are men who demand the best. The Aero Commander Nation-Wide Sales and Service organization unites a combined total of more than 261 years of aviation experience and technical knowledge. Commander owners are assured of a service commensurate with the fine quality of the product itself, when they deal with these firms of recognized integrity.

LEFT TO RIGHT, TOP TO BOTTOM:

J. K. "Johnny" Hamp, Aero Sales Division, Houston Transportation Co., Municipal Airport, Houston, Texas; Fred Smith, Sales Manager, AiResearch Aviation Service Co., 5907 W. Imperial Highway, Los Angeles 45, California; Cy Willock, Sales Manager, Downtown Air-Park, Inc., 1800 South Western, Oklahoma City, Oklahoma; Art Meurer, Arthur Meurer Co., Inc., LaGuardia Field, New York, N. Y.; Don Pennington, Carolina Aero Company, Municipal Airport, Asheville, North Carolina; Don Hood, Air Sales and Service Company, Wier Cook Municipal Airport, Indianapolis, Indiana; C. W. "Wayne" Crussell, Southern Aero, Inc., Municipal Airport, Atlanta, Georgia; H. Leibee Wheeler, Buffalo Aeronautical Corporation, Buffalo Municipal Airport, Buffalo, New York; H. Warren Holladay, Stonnell and Holladay, Washington National Airport, Washington, D. C.; B. G. Vandre, Van's Air Service, Municipal Airport, St. Cloud, Minnesota; H. William "Bill" Blake, Sales Manager, Washington Aircraft and Transport, Boeing Field, Seattle, Washington; F. J. Waltz, Morgan and Waltz, Mexico City, D. F.

AERO DESIGN *Commander*

TULAKES AIRPORT • OKLAHOMA CITY, OKLAHOMA

Now More Than Ever the Outstanding Aviation Value!

Be sure to see and fly the new beautiful 1953 Tri-Pacer at your Piper dealer or distributor now. The snappy performance, the flying ease, the cabin comfort, and the restful quiet will prove to you that, once again, Piper has set the pace in business airplane development.

Here are just a few reasons why:

- **MORE ROOM and COMFORT and SENSATIONALLY QUIET**
- **MORE BAGGAGE SPACE**
- **NEW BEAUTY and STYLING**
- **135 HORSEPOWER**

• Ask one of the firms listed to demonstrate how one of the Piper models can save you valuable time and money. These firms are prepared to serve all your aircraft requirements.

Arizona
ANDERSON AVIATION COMPANY, INC.
Sky Harbor Airport
Phoenix

Louisiana-Mississippi
LOUISIANA AIRCRAFT
Municipal Airport
Baton Rouge, La.

Oklahoma
SMYER AIRCRAFT SALES & SERVICE
Municipal Airport
Ponca City

Texas
BROWN FLYING SERVICE
Municipal Airport
San Antonio

JACK ROBINSON FLYING SCHOOL
Meacham Field
Fort Worth, Texas

PARKER-HUETT AVIATION COMPANY
White Rock Airport
Dallas

SOUTHWEST AIR RANGERS
Municipal Airport
El Paso, Texas

WICHITA FALLS AIR TRANSPORT COMPANY
Municipal Airport
Wichita Falls

CESSNA'S MODEL 180

(Continued from page 16)

flaps, to 60 mph. (64 mph. calibrated for system error) without power or flaps. With full flaps and power off, the stall comes at 52 mph. IAS (57 mph. calibrated for system error) and with power and no flaps, the stall is at 40 mph. IAS (55 mph. calibrated for system error).

Because of the Model 180's highly effective flaps, the airplane can be slowed down to indicated air speed readings approaching "0," the nose in such a high position as to render the pitot intake inoperative. But without any rate of sink at all, Hank was able to slow down to a reading of 40 mph. He then picked up the flaps and followed this by adding full throttle, instead of adding power before picking up his flaps. There was no pitching or misbehavior. The 180, in a climbing attitude at the time, continued nose-high and just climbed out and away. Stall demonstrations showed the effective aileron control for which the Model 170 is outstanding.

Owners of 170's will find the new and faster 180 handles even better than the 170. The extra horsepower makes a difference in handling. A fully adjustable horizontal stabilizer is used. With its larger engine, the 180's center of gravity is slightly forward of that in the 170, and the adjustable stabilizer counteracts this and makes possible lighter elevator pressures while eliminating the use of a trim tab for more aerodynamic cleanness for less drag. Adjusted by a large control wheel in the cockpit, the horizontal stabilizer has an 8-degree travel and the elevator, which is smaller than that on the 170, trails the elevator throughout the settings. A new tailwheel strut is of rounded steel tube, also reducing drag.

Although the more powerful engine has more weight, as does the propeller, and even with structural beefing for higher speeds, the new 180 is only 255 lbs. heavier than the 170 in empty weight. From an efficiency standpoint, this is offset by a gross weight which is 350 lbs. above that of the 170, so that the 180's useful load is 1,090 lbs. as compared with 995 for the 170. Empty weight for the 180 is 1,460 lbs., and gross weight is 2,550 lbs.

The 180's interior is a duplicate of the 170's in dimensions, plush and excellency of workmanship. It also utilizes the 170's new ducted air system, with multiple outlets for cool or heated air. Visibility forward over the nose is less than that offered by the 170 because the engine cowling is 4 inches higher. This will require more attention while taxiing, since the nose is longer and higher than on the 170.

but the difference is hardly noticeable while in flight.

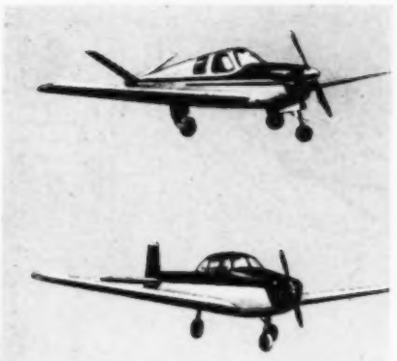
Sitting idly on the ramp, the new 180 will attract about the same attention as a 170. But in short-field performance, high rate of climb, 150-mph. cruising speeds, ease of handling and maintenance simplicity, it is bound to prove surprising to many aircraft owners. Tom Salter and his department didn't get the 180's speed out of sheer horsepower alone. Their big achievement was in holding down the weight, reducing drag, and in retaining the simplicity of design which has made the 170 so popular.

A 170 pilot, for example, will experience a lot more acceleration in the take-off run. At gross weight and at sea level, with no wind, the factory says the 180 will clear a 50-ft. obstacle on take-off within 985 ft. This compares with 1,625 ft. for the 170. Sea level rate of climb at gross weight is 1,150 feet per minute as compared with 690 feet per minute for the 170. In the 180, Hank Waring's cruising climb of 900 fpm. at 110 mph. will reach an altitude of 10,000 ft. in 16 minutes, which is really covering ground and altitude. Landing distance at sea level over a 50-ft. obstacle is 1,201 ft., this being at an approach speed 30 per cent over the stall and at gross weight.

Owners of 170's who fly in the mountains and from airports at high elevations will benefit especially from the 180's higher horsepower and excellent short-field characteristics. These people have needed either supercharging or additional horsepower all along. The new Continental offers additional horsepower to start with and Continental's experimentation, under wraps, with belt-driven supercharging may eventually make blowers a reality for lightplanes.

For water operations as a float plane, the new 180 is said to be exceptionally impressive with a cruising speed of more than 135 mph., 940-fpm. rate of climb, 16,500-ft. ceiling and excellent take-off.

Dwane Wallace, Cessna president, sees the 180 as a "natural" in its appeal to aircraft owners in the "medium" category and those in the Model 170 class who want more performance without too great a step-up in complexity and costs. He is personally directing a greatly-expanded Cessna sales program for 1953 which was to be detailed at the annual distributors meeting. Cessna made history in lightplane sales last year and, from what we learned in a presentation preceding the annual meeting, its 1953 campaign is pitched for much higher volume in sales and production. ★ ★ ★



WHATEVER YOU FLY

YOU will experience a new flying pleasure when you install the....

Lear Automatic Pilot

The LEAR L-2 AUTOPILOT does the flying for you—performs any normal maneuver in turbulent or still air—automatically and with unequaled precision.

You will also want to investigate the AUTOMATIC ALTITUDE CONTROLLER, which maintains your airplane automatically at a constant pressure altitude, and the AUTOMATIC APPROACH COUPLER for blind landings which will bring your airplane down to within a few feet of the runway without requiring a human hand at the controls.

Purchasers of the Lear L-2 AUTOPILOT can add the Automatic Altitude Controller and Automatic Approach Coupler at any time after the installation of the L-2 Autopilot. Adaptable to all planes.

Aircraftsmen, Inc., a pioneer distributor of Lear products, staffed by factory-trained specialists is prepared to install the Lear L-2 Autopilot in any aircraft. Our long specialized experience is your guarantee of the finest installation in minimum time at flat rates.

CAA Repair Station 289

Aircraftsmen Inc.

Will Rogers Field **MElrose 8-6338** **Oklahoma City, Okla.**

2-way VHF communications system cuts pilot strain because it's TWICE AS EASY TO USE

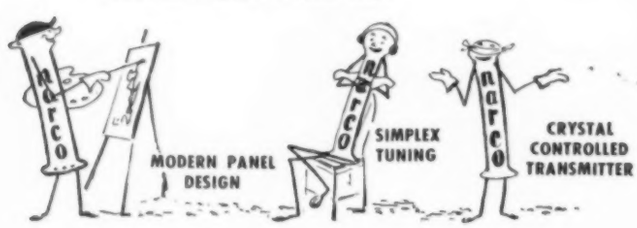
First because the 12 channel transmitter lets you avoid the usually crowded general tower frequencies. You select the exact frequency assigned to the tower—and talk without waiting.

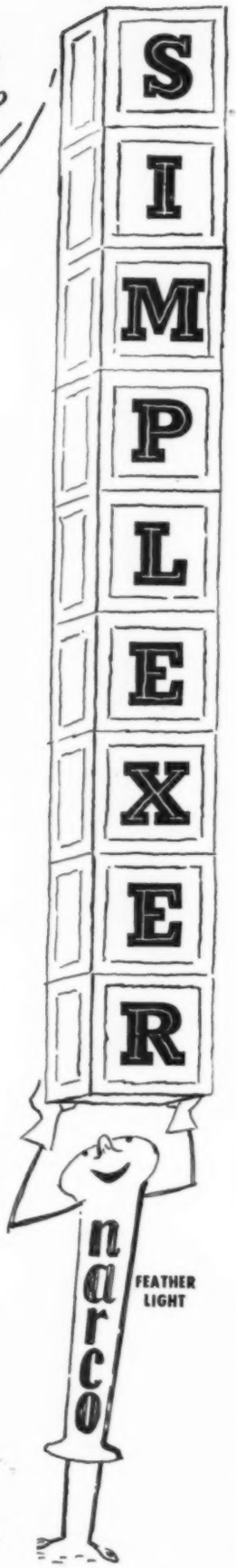
Second because you tune without watching the dial. *Just pull, crank, push.* The crystal calibrated whistle tells you that you are on the right frequency. You are safer—because you can keep your eyes on air traffic, not on the radio.

Plus sensitivity and clarity that is absolutely amazing. The SIMPLEXER reaches out and gets the distant stations . . . provides you with complete local weather information for the entire course.

Weighs less than 4 pounds. Fits any panel, because it is only 6" deep. Use it alone, or combine it with any other radio equipment. But, for safety's sake, get a SIMPLEXER.

Like all Narco flight proven products, the SIMPLEXER is sold and serviced from coast to coast. See your Narco dealer, or write for the data sheet that gives the technical facts behind SIMPLEXER's superiority.





narco NATIONAL AERONAUTICAL CORPORATION
AMBLER 2, PA.

WHAT THE CUSTOMERS WANT

(Continued from page 21)

link in the chain. The factories are especially conscious of the problem and are doing something about it. Distributors are going to have to do more in helping to create good, solid, hard working and financially sound dealerships.

Piper is not raising prices in 1953, yet offering improved airplanes. In effect it is actually a price reduction. List price on the Super Custom Tri-Pacer is $7,105. It is so fully equipped about the only extra you can put on it is an autopilot. The standard model sells for $5,595, the custom for $6,195. You can hold the price line, says Brown, by offering the three alternatives, depending on equipment desired. It used to be every airplane owner wanted a different set of equipment and practically every airplane came out of the factory as a "special" job. That's all old-fashioned and out of date now. You pick one of three models and that's it—the ones that come down the production lines. If you want something different, get it done after you fly it home. The same holds true in the PA-20 Pacers and the PA-18's.

The most impressive improvements on the Piper Pacers for '53 are the 4 inches of additional shoulder room in the cabin, the new soundproofing that produces a noise level about as quiet as the Bonanza, 10 additional horses in the engine, a 100-pound baggage compartment with outside access door and a commodious hat-throw for lightweight paraphernalia. Brownie says the factory people are at last thinking about the ladies and that women are oftentimes the deciding factor in an airplane sale. The comfort from additional cabin room and the quieter cabin, plus adequate ventilation, are helping to skyrocket orders for the new Pacers.

Getting over-optimistic about the civilian airplane market has never been a habitual pastime around FLIGHT MAGAZINE offices. We've seen the Sunday supplement aviation writers come and go. Sometimes they predict an airplane in every family, at other times they scream the business will never amount to anything. The lightplane industry has suffered undeservedly from both extremes, especially from our own industry people who continue to sell the business short. Right now it looks like it's going to succeed in spite of the second-guessers who have guessed themselves right out of business. The U. S. private plane industry may be entering its most profitable year. ★ ★ ★

7000 FEET

When you choose your own airplane bear in mind that you want top performance at altitude—for as you go higher you gain many benefits—smoother air, better gas economy, superior VHF radio reception, much easier navigation and added safety. The 1953 Tri-Pacer gives you an added advantage at altitude—you cruise faster as you climb higher.

With better than two-mile-a-minute sea-level cruise at 75% power, the Tri-Pacer's cruising speed steadily increases to maximum at 7,000 feet. Up to 14,000 feet your cruising speed is still greater than at sea-level. This is an important advantage. That's why pilots in South America, in the Rocky Mountain states and in Alaska will invariably say that Piper's the better airplane at altitude where you want to fly. Better on take-off, better in climb, faster cross-country. Remember these points when you select your airplane.

And in the 1953 Tri-Pacer many fine new improvements have been added *all at no increase in price.* Whether you judge the Tri-Pacer by price or performance, you'll inevitably decide it's the best buy in aviation today. See it, fly it at your Piper distributor's.

YOU GET THESE TOP FEATURES IN THE SENSATIONAL NEW 1953 TRI-PACER

More room and comfort for four passengers
More baggage space with outside door • 135 HP Lycoming
Greater useful load • New beauty and styling
Tricycle gear and simplified controls • Duraclad finish

Also the Model PA-20 Pacer with three-point gear

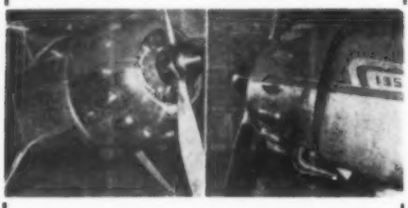
For Your FREE full-color brochure on the new 1953 Tri-Pacer and Pacer just write Dept. F-1.
PIPER AIRCRAFT CORPORATION
Lock Haven, Pennsylvania

PIPER Aircraft Corporation Lock Haven, Pennsylvania

MORE PEOPLE HAVE BOUGHT PIPERS THAN ANY OTHER PLANE IN THE WORLD

Cessna 195 Owners!

West Texas Flying Service, Midland, Texas, can convert your 165 mph. Cessna to 180 mph. through installation of a fresh Zero Major 330 Hp. Jacobs Engine.



Offering a limited number of 330 hp. exchange engines, with remanufactured guarantee, to owners of Cessna 195.

Add the following advantages to your plane

- **Cruising Speed over 180 Mph.**
- **Rate of Climb over 1300 Fpm.**
- **Take-off Distance Reduced.**
- **Reduced Vibration.**
- **Lower Noise Level.**
- **Increased Service Ceiling.**

Installation of 330-hp. Jacobs Engine and conversion CAA Approved.

Cost $3,500 and Your Old 300-hp. Jacobs Engine

Call or Wire Today

WEST TEXAS FLYING SERVICE
Midland Air Park
Midland, Texas **Telephone 3-3191**

Questions and Answers for Airport Operators

Training Assistant Managers

QUESTION: After several years of operating the municipal airport here as airport manager, I've finally got a pretty good working organization. It took a little time because I had to take over a number of employes who had worked for the city a long time. Finally from among them I was able to build up a young fellow, about thirty, to the point where he makes a good assistant and has been able to take over a lot of the detail and leg work. I've piled responsibilities on him and he has done a good job. Without actually drawing a sharp line between his duties and those responsibilities he should leave strictly to me, we have had a good working arrangement until lately.

He has assumed a position of making decisions or taking action which normally I would do myself. I found that one of our city councilmen had made requests of him directly for certain action and information. He took it upon himself to go ahead on his own initiative to comply with the councilman's requests. I'll have to admit that he told me immediately what he was doing and made no effort to do anything behind my back. What do you think about a situation like that? What steps should I take to reserve my responsibility for final decision?

ANSWER: One of the most difficult problems an airport executive faces is the building of an organization which will assume the responsibilities assigned to it. The key man is his assistant. In theory he must be trained to be fully capable of assuming the responsibilities of the airport manager in emergencies when the manager is not available. This involves the making of decisions which are required immediately. Matters of policy or decisions which are not of immediate urgency can wait until they can be referred to the manager.

Good assistants are not easy to find or to train. Usually the fault lies in an aversion to accepting responsibility. When you find an assistant of good judgment who will accept and take on increasing responsibilities you have a man of considerable merit. You

(Continued on page 38)

Roy W. Lessard, Assistant Chief of Design. Has had extensive aeronautical design and structures experience with many leading aircraft manufacturers and is part of the Fairchild engineering team.

Engineers

AN INVITATION TO YOU TO GO PLACES WITH FAIRCHILD

A secure future, exceptional opportunities for advancement, and a high starting salary await you at FAIRCHILD. We have openings right now for qualified engineers and designers in all phases of aircraft manufacturing.

Paid vacations, liberal health and life insurance coverage, 5-day, 40-hour week as a base. Premium is paid when longer work week is scheduled.

ENGINE AND AIRPLANE CORPORATION
FAIRCHILD *Aircraft Division*
HAGERSTOWN, MARYLAND

RAGSDALE REPORTS

THE NEW "GOLDEN YEAR"

Cessna 170

THE NEW ALL-METAL CESSNA 170! The plane businessmen found the most practical for their business needs in 1952 . . . new and greatly improved for flying's anniversary year! The finest 170 ever built to save hours, increase efficiency, earn more profits for you!

The "Golden Year" Cessna 170 is new in appearance, new in performance, new in comfort and safety. All of the new features can't possibly be listed here—but if you, like so many other businessmen, feel that there is a place for an airplane in your business, see the new low priced all-metal Cessna 170.

Ragsdale Flying Service is prepared to make prompt delivery on all Cessna models. Our sales staff will be happy to demonstrate the model of your choice.

Ragsdale Flying Service
Municipal Airport **Austin, Texas**

REMEMBER THE ALAMO!

...when you set down at McCarran Field, Las Vegas, Nevada

NEWLY IMPROVED facilities make Alamo Airways more than ever a favorite with fliers. Owners Peg and George Crockett agree: "We're always trying to make our service better and have found that the 'little things'—like honoring any credit card — are mighty important. We believe in quality first, last and always. That's why we've handled Texaco exclusively ever since we started our operation."

ALAMO AIRWAYS, Las Vegas, Nevada, offers fliers every wanted service and facility. There's the friendly greeting . . . the "Follow Me" jeep . . . the new and enlarged lounge and map room . . . comfortable overnight quarters . . . U-drive cars . . . improved servicing facilities. And, for the past thirteen years, famous Texaco Aviation Lubricants and Fuels.

When you give top service like this and back it with nationally famous products, your business is bound to boom. That's why you see the Texaco sign at progressive airports. Quality has put Texaco in the lead throughout the aviation industry. One evidence is the fact that —

For over 15 years, more revenue airline miles in the U. S. have been flown with Texaco Aircraft Engine Oil than with any other brand.

Remember the Alamo! Latch on to the line that builds business — Texaco. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, *Aviation Division,* 135 East 42nd Street, New York 17, N. Y.

TEXACO

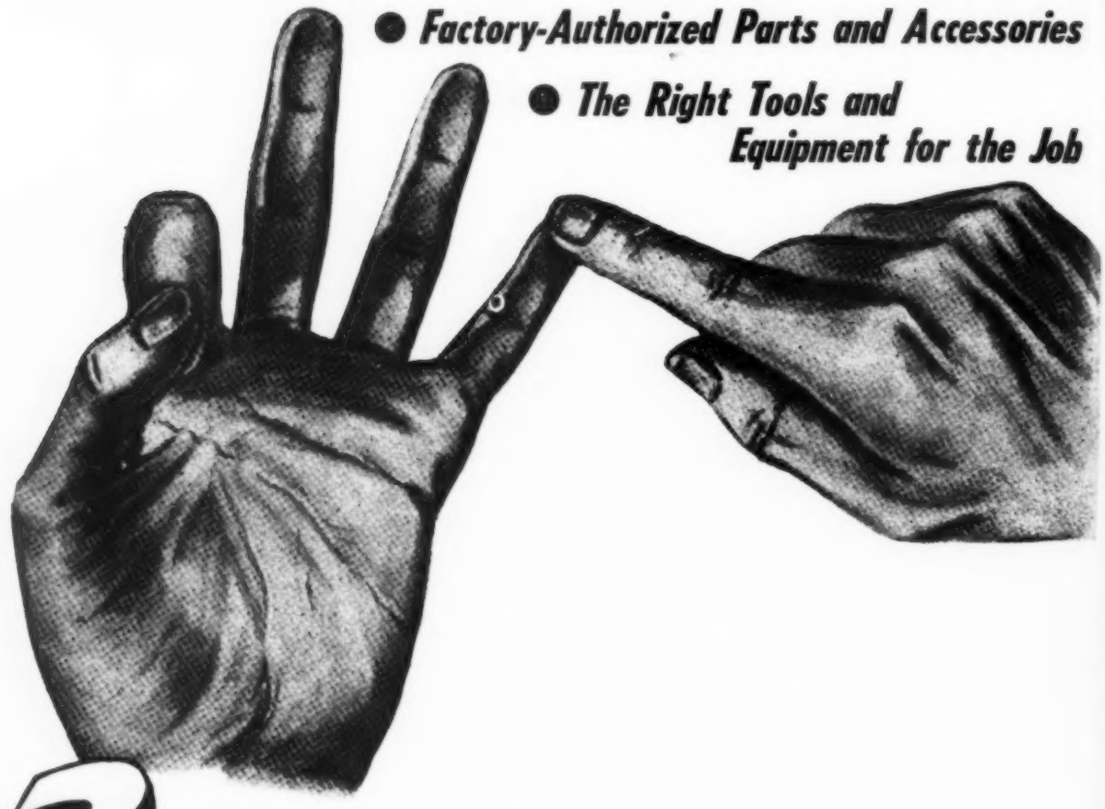
TEXACO Lubricants and Fuels
FOR THE AVIATION INDUSTRY

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE, on television Tuesday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.

● *Technical Know-How and Experience*

● *Factory-Authorized Parts and Accessories*

● *The Right Tools and Equipment for the Job*



3 things you can count on at Certified Beechcraft Service Stations

To obtain the best service for your Beechcraft and for prompt attention to maintenance and overhaul requirements, visit the Certified Beechcraft Service Stations listed.

Aircraftsmen, Inc.
Will Rogers Field
Oklahoma City, Oklahoma

Alamo Aviation, Inc.
Municipal Airport
San Antonio, Texas

Anderson Air Activities
General Mitchell Field
Milwaukee, Wisc.

Truax Field
Madison, Wisc.

Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey
also
Logan Airport
East Boston, Mass.

Atlantic Aviation Service
New Castle County Airport
Wilmington, Delaware

Butler Co., Aviation Division
Municipal Airport
Chicago, Ill.

Currey Sanders Aircraft Co., Inc.
Downtown Municipal Airport
Shreveport, La.

Cutter-Carr Flying Service, Inc.
West Mesa Airport
Albuquerque, New Mexico

Francis Aviation
Capitol City Airport
Lansing, Michigan

Gray Aircraft Svc. Co., Inc.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

Hunter Flying Service, Inc.
Hunter Field
Cedar Rapids, Iowa

Rod More Aviation Services
Cuddihy Field, P. O. Box 556
Corpus Christi, Texas

Ohio Aviation Company
Dayton Municipal Airport
Vandalia, Ohio

Pacific Aircraft Sales Co.
Oakland Airport
Oakland, California

Roscoe Turner Aeronautical Corp.
Municipal Airport
Indianapolis, Ind.

J. D. Reed Co., Inc.
Municipal Airport
Houston, Texas

Southern Flight Service, Inc.
Douglas Municipal Airport
Charlotte, N. C.

Topeka Aircraft Sales & Service
Municipal Airport
Topeka, Kansas

Tradewind Airport Corp.
Tradewind Airport
Amarillo, Texas

Tulsair Distributors, Inc.
Hangar 5, Municipal Airport
Tulsa, Oklahoma

Wings, Incorporated
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Ambler, Pennsylvania
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Philadelphia, Pennsylvania

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In so many organizations the top men, the key men, need "doubles" — that's one of the big reasons for so many company-owned Beechcrafts. These swift carriers whisk needed men to *where* they're needed in hour-saving, day-saving time. The faraway problem is reached and solved, and you're back before you're missed.

Travel-time is cut as much as 75 per cent with Beechcrafts. You go when you need to; you're on the job; you "get the true picture" firsthand—quickly and economically. In fact, typical costs and operating data may change your whole conception of the cost of Beechcraft travel.

☆ ☆ ☆

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Safe, drift-free, static-free OMNI gives you a reliable signal to follow, whatever your bearing. And ARC's compact Type 15D VHF Navigation Equipment makes OMNI available to executive aircraft of any size, as well as to private and transport aircraft. Just tune in OMNI and keep the needle of your ARC indicator on zero!

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All ARC Airborne equipment is Type Certificated by CAA. It is designed for reliability and performance, not to meet a price. Installations for both single and multi-engine planes are made only by authorized service agencies.

Aircraft Radio Corporation
BOONTON, NEW JERSEY
Dependable Electronic Equipment
Since 1928

QUESTIONS AND ANSWERS

(Continued from page 34)

must apply within your own mind an unbiased test to determine whether his acceptance of increasing responsibility is motivated by a desire to help you loyally or whether his aim is to put you in a bad light. You can only make that determination yourself.

Loyalty from your employes is of tremendous value. Somehow we feel that it is inspired by loyalty on your part toward those who work for you. That loyalty means that you stand back of them with your full support when they are right and that you confine your correction of their judged actions to private discussion with them when they are wrong. If you have told an employe to use his judgment in a matter, then you have assumed responsibility for his judgment and should not let him down publicly if that judgment differs from yours.

The handling given younger men on your staff can make or break their own opinions of themselves and of you. Now take this man you've written about. Did the actions he took or the decisions he made need to be taken immediately? If you were faced with the same needs would you have taken the same action or made the same decisions? If the answers to both are yes, then you've got a good man there.

If you find fault with an assistant simply for making a needed decision and can actually find no fault with the decision itself, you are needlessly destroying initiative and lowering his confidence. That's piling work on yourself.

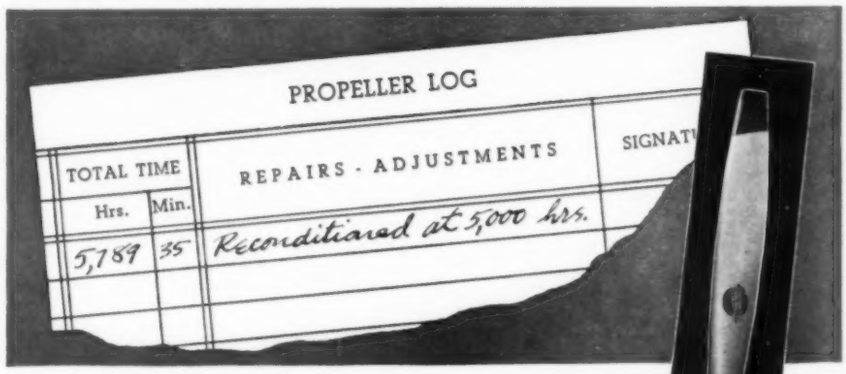
We note you say that one of the councilmen called him directly and he went ahead on his own, but kept you advised. This is evidence that he was not trying to assume your prerogatives. The very fact that he told you what he was doing was a tacit request to you for approval or disapproval of his action. You could have said, "Don't do it."

Probably the councilman recognizes as you do that you've got a good assistant and called him for something within his capabilities in the belief that you would have asked the assistant to do the work anyway and he didn't want to bother you with details.

If you feel you have to slow your assistant down a little, do it gently and with a full and tactful explanation. Don't let him get the idea you are just jealous of your prerogatives, even if you are.

Airport Register for Pilots

QUESTION: On a trip last week, we stopped overnight at an airport and the operator who hangared our aircraft made a record of the pilot's name and address, where we were go-



How's this for Service?

5,789 hours—more hours than the average pilot will ever log—that's the record of perfect service set by one of the more than 30,000 Met-L-Props now in use!

For a prop that will always give you safe, smooth performance . . . at the lowest cost per flying hour . . . be sure you say, "make mine a Met-L-Prop."

And remember, if your Met-L-Prop should be accidentally damaged, it can be factory reconditioned at moderate cost.

McCAULEY INDUSTRIAL CORPORATION
1840 Howell Ave. • Dayton 7, Ohio

ing to stay that night, what time we expected to leave and where we were going. He wrote it down on a little printed slip. I'm an airport manager and I don't think anybody on my airport makes records like that. I can see that it might be useful in case someone who knew we were flying through there wanted to get in touch with us, but don't you think pilots generally would dislike giving out a lot of information like that?

ANSWER: Perhaps some do, but if they gave the matter a little thought, they'd be glad to provide the information. You guessed the reason for most of the information. The operator wanted to know where he could find you in case you were wanted during your stay, but he also wanted to know how to call you himself regarding any service he was rendering you or anything he might discover needing attention on the airplane when he put it away. It sometimes happens that way.

Actually he probably included on that slip, the obvious information of make and type of aircraft, ownership as shown by the certificate in the aircraft, N number, besides the information for which he asked you. So when you've come and gone he'll have a pretty good count of type and kind of transient business he has, a mailing list to which he can send a "thank you" post card or a calendar.

Such records serve both of you. He saved you the trouble of writing that down by filling in the information himself. And in the morning he could have the aircraft ready for you when you planned to leave. On some airports very complete records of that sort are made and they are useful. You might even try it yourself. Remember, however, that when such records become too much of a burden on the traveler, they may be resented. Above all don't make a pilot walk a quarter of a mile to your office to register. Make the gathering of such data as painless as possible. ★ ★ ★

AIR REPORT

(Continued from page 7)

performs any airplane in its class anywhere in the world and is vastly superior to the MIG-15."

SECOND ANNUAL AGRICULTURAL AVIATION CONFERENCE AT TEXAS A. & M. COLLEGE will be conducted February 22-24, with reports on a series of experiments made during 1952 in the fields of mesquite control, mixed brush control, weed control in field crops, defoliation and various aspects of insect control.

Arma Corporation of Brooklyn, New York, has developed a **JAM-PROOF AERIAL NAVIGATION SYSTEM BASED ON PRECISION GYROSCOPICS** which will provide guidance of pilotless missiles or piloted aircraft to any spot on the

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AIRCRAFT ENGINES
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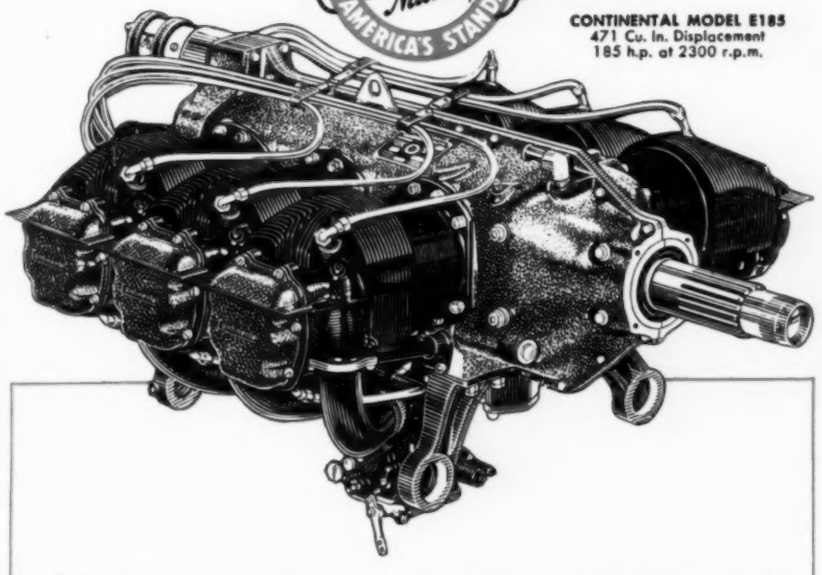
TODAY'S UTILITY PLANES

CONTINENTAL MOTORS · Powerful as the Nation · AMERICA'S STANDARD



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471 Cu. In. Displacement
185 h.p. at 2300 r.p.m.

IT IS a tribute to the quality of Continental engines, as well as to the judgment of corporate and individual owners of utility type planes, that an overwhelming majority of such planes in use today fly with dependable Continental Red Seal power.

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WHEREVER YOU FLY

Continental Motors Corporation
Aircraft Engine Division
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globe by means of homing or direction by inertial space reference, or stationary stars, which need not be visible. The gyroscopic "brain" would read instruments automatically and pass the information on to electronic equipment which actuates all controls. The same power that drives the missile or plane would drive the gyro, thereby eliminating any chance of a secondary power source failure. Key to the perfection of the gyroscope was in miniaturization and overcoming bearing friction in the gimbals.

U. S. AIRCRAFT MANUFACTURERS ARE UNREALISTIC IN THEIR JET TRANSPORT ATTITUDE, says William Littlewood, American Airlines vice president-engineering, and America's leadership in air transports depends on whether the factories undergo a basic change in this attitude. He said cost estimates of $5,000,000 per jet transport "just do not smack of reality, nor of any real desire to do the job, nor indicate any willingness to take a reasonable American industrial risk in the doing of it—I hate to think where we would be today if that spirit had characterized the 25 years of air transport which have just passed." Littlewood's comment was given last month when he delivered the 16th Wright Brothers Lecture before 600 of the nation's top aeronautical engineers and scientists in Washington.

BEST DOMESTIC AIRLINE SAFETY RECORD IN HISTORY was achieved in 1952, with only 0.38 passenger fatalities per 100 million passenger miles compared with the previous all-time record of 1.1 in 1950. The Civil Aeronautics Board reported this in a year-end review which also cited a $16,000,000 saving by the Board's downward adjustment of mail rates, and an unparalleled increase of 83 per cent in low-fare air coach traffic.

FIRST FLIGHT OF GRUMMAN'S NEW S2F-1 TWIN-ENGINE ANTI-SUBMARINE AIRPLANE was reported last month. It carries equipment for both detection and attack and is powered by two Wright R-1820 engines.

SUPERSONIC CONVAIR BOMBERS appear as the logical production successors to the B-36 at Fort Worth, according to J. V. Naish, Convair executive vice president.

Airmen's Calendar

Jan. 11-13—TSAA Convention, Plaza Hotel, San Antonio, Texas.

Jan. 12-16—Society of Automotive Engineers Annual Meeting and Display, Sheraton-Cadillac Hotel, Detroit.

Jan. 13—Annual Sales Meeting of Cessna Distributors and Dealers, Wichita, Kansas.

Jan. 15-16—5th Illinois Custom Spray Operators Training School, University of Illinois, Urbana, Ill.

Jan. 30-31—Texas Flying Farmers Convention, Roosevelt Hotel, Waco.

Feb. 12-13—National Aviation Education Council's Annual Meeting, Atlantic City, N. J.

Feb. 22-24—2nd Agricultural Aviation Conference, Texas A. & M. College, College Station, Texas.

TROPHY WINNERS LAST MONTH: John Stack of NACA received the coveted Collier Trophy; Lt. Gen. James H. Doolittle, famous airman and Shell Oil Company official, received the Wright Memorial Trophy; and Maj. Gen. Lucas V. Beau accepted the Brewer Trophy on behalf of Civil Air Patrol. President Truman made the presentations.

FOR OPERATING FASTEST U. S. COMMERCIAL PASSENGER FLIGHT ON REGULAR SCHEDULES, Panagra has received the Frye

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It Makes CENTS to FLY

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For overnight, a week or a season.

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Require: Experience in workmanship and the finest quality materials.

Matthews Electronics is highly qualified to give the aircraft owner specialized engineering and consultation service on his present or contemplated radio equipment. We will make planned proposals for special designed installations. Whatever your needs in aircraft radio MATTHEWS offers superior products with built-in qualities of excellence and the experienced technical knowledge that defies competition.

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PRECISION AEROMOTIVE CORPORATION

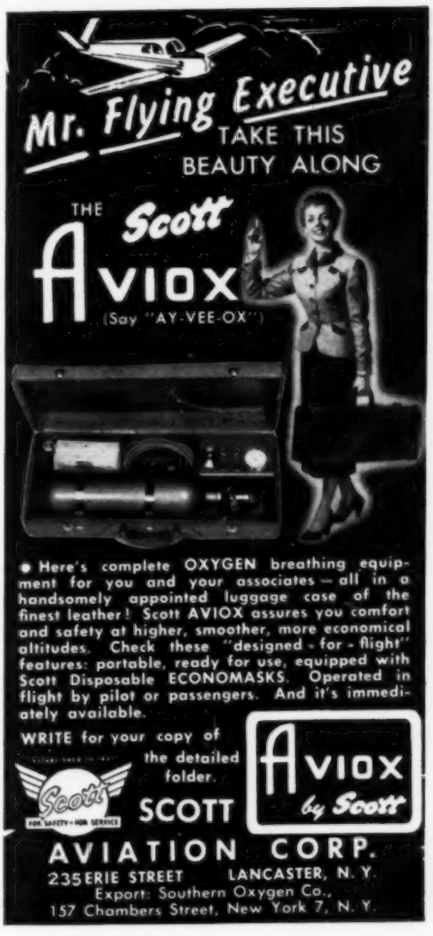
MUNICIPAL AIRPORT — Milby-6636 — HOUSTON 17, TEXAS

Trophy, offered by Jack Frye "to foster supremacy of U. S. aircraft and to encourage faster and more efficient service." Panagra won it with its 2-stop schedule of 16 hrs. 16 mins. over a 4,587-mile route, operating Douglas DC-6's averaging 325 mph. at 20,000 ft.

NEW FLYING L RANCH MANAGER is Lt. Col. Robert Cleuter, according to announcement by Col. and Mrs. Jack Lapham, owners. Col. Cleuter has retired from the Air Force after 27 years of active duty. The Flying L, located near San Antonio at Bandera, Texas, is America's most famous airport-dude ranch resort, operated by the Laphams to fulfill a life-long ambition for a place where the private flier can land with a welcome and relax in an informal western atmosphere. Col. Lapham is a retired army pilot, polo player and sportsman pilot who has figured prominently in the growth of civilian flying. . . . **WILLIAM H. OSWALD, JR.**, is new sales manager of Wings, Inc., Ambler, Pa., Beech distributor, according to T. Guy Miller, president. Oswald was formerly with the Babb Co. . . . **EDWARD LUND**, who began his aviation career 28 years ago with Douglas Aircraft and was flight engineer with Howard Hughes on his 1938 round-the-world flight, has been promoted from executive vice president to president of the Babb Co., leading aircraft sales, service and supply organization, Newark, N. J. Charles H. Babb, the firm's founder, died suddenly on Nov. 15. . . . **BUTLER AVIATION** has taken over the sale of Shell Oil Company aviation products at LaGuardia Field in New York.

JUSTIN ALLEN FITZ, widely-known Sperry Gyroscope Company director of advertising and public information, died suddenly on December 9, his 60th birthday. With Sperry 35 years, he was a World War I Navy veteran and helped make the first permanent gyro-compass installations on ships, tanks and lighter-than-air craft. . . . **SHERMAN S. GRAVES**, manager of Cessna Aircraft's helicopter division, was killed December 15 at Richmond, Indiana, when his Cessna 170 and a Lake Central Airlines DC-3 were in collision on the ground, the DC-3 being only slightly damaged without injury to occupants. Only 39, Graves had been with Cessna since 1936, becoming chief of inspectors in 1941.

ASSURANCE OF NO SUDDEN CESSATION OF MILITARY AIRCRAFT PRODUCTION when the Air Force goal of 143 wings is reached in 1956 has been given to the aircraft industry by Maj. Gen. W. H. Tunner, deputy commander of Air Materiel Command. He said the Air Force has "four insurance policies against widespread cancellation of contracts such as threw the industry into turmoil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after World War II," listing them as (1) production stretch-out, (2) production readjustment, (3) production acceleration program and (4) maintenance by contract.

TITANIUM BASE MATERIALS ARE GOING INTO B-36 BOMBERS being produced at Fort Worth. On a gauge-for-gauge basis, sheet titanium is replacing steel in firewalls and other non-structural parts in B-36 engines. Heat and corrosion resistance is one of the mystery metal's greatest advantages, which include strength-to-weight ratio superiorities. About 700 lbs. of titanium will be used in each B-36 coming off the line after January 1, replacing about 1,100 lbs. of steel per airplane. Pure titanium now sells at $21.50 per pound and Convair says no way has yet been found to salvage the scrap.

FOR SALE

FIXED BASE OPERATIONS AND FLIGHT SCHOOL located in Oklahoma. . . . A going operation with Korean veterans flying from sod field adjacent to main paved highway. Approved for private, commercial and instrument training. Active storage, gas, oil and shop business. Storage income exceeds rentals. Sale includes unflown time on GI's and airplanes, shop equipment, furniture, fixtures and lease improvements. Located near large city. Worth checking into. Box 750-K, FLIGHT MAGAZINE, Dallas, Texas.

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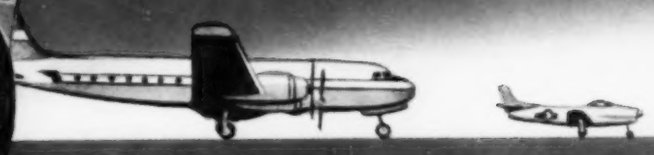
This remarkable lining, known as CERAMETALLIC brake lining, is fundamentally different in that it contains no resin or other organic substance; the base is a ceramic material combined with other ingredients to give long wear and good friction properties.



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